Service Manual

Lexmark™ X543 - X544 series

7525xxx

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Notices and safety information

The following laser notice labels may be affixed to this printer.

Laser notice

The printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for Class I (1) laser products, and elsewhere is certified as a Class I laser product conforming to the requirements of IEC 60825-1.

Class I laser products are not considered to be hazardous. The printer contains internally a Class IIIb (3b) laser that is nominally a 5 milliwatt gallium arsenide laser operating in the wavelength region of 770-795 nanometers. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Laser

Der Drucker erfüllt gemäß amtlicher Bestätigung der USA die Anforderungen der Bestimmung DHHS (Department of Health and Human Services) 21 CFR Teil J für Laserprodukte der Klasse I (1). In anderen Ländern gilt der Drucker als Laserprodukt der Klasse I, der die Anforderungen der IEC (International Electrotechnical Commission) 60825-1 gemäß amtlicher Bestätigung erfüllt.

Laserprodukte der Klasse I gelten als unschädlich. Im Inneren des Druckers befindet sich ein Laser der Klasse IIIb (3b), bei dem es sich um einen Galliumarsenlaser mit 5 Milliwatt handelt, der Wellen der Länge 770-795 Nanometer ausstrahlt. Das Lasersystem und der Drucker sind so konzipiert, daß im Normalbetrieb, bei der Wartung durch den Benutzer oder bei ordnungsgemäßer Wartung durch den Kundendienst Laserbestrahlung, die Klasse I übersteigen würde, Menschen keinesfalls erreicht.

Avis relatif à l’utilisation de laser

Pour les Etats-Unis : cette imprimante est certifiée conforme aux provisions DHHS 21 CFR alinéa J concernant les produits laser de Classe I (1). Pour les autres pays : cette imprimante répond aux normes IEC 60825-1 relatives aux produits laser de Classe I.

Les produits laser de Classe I sont considérés comme des produits non dangereux. Cette imprimante est équipée d’un laser de Classe IIIb (3b) (arséniure de gallium d’une puissance nominale de 5 milliwatts) émettant sur des longueurs d’onde comprises entre 770 et 795 nanomètres. L’imprimante et son système laser sont conçus pour impossible, dans des conditions normales d’utilisation, d’entretien par l’utilisateur ou de révision, l’exposition à des rayonnements laser supérieurs à des rayonnements de Classe I .

Avvertenze sui prodotti laser

Questa stampante è certificata negli Stati Uniti per essere conforme ai requisiti del DHHS 21 CFR Sottocapitolo J per i prodotti laser di classe 1 ed è certificata negli altri Paesi come prodotto laser di classe 1 conforme ai requisiti della norma CEI 60825-1.

I prodotti laser di classe non sono considerati pericolosi. La stampante contiene al suo interno un laser di classe IIIb (3b) all’arseniuro di gallio della potenza di 5mW che opera sulla lunghezza d’onda compresa tra 770 e 795 nanometri. Il sistema laser e la stampante sono stati progettati in modo tale che le persone a contatto con la stampante, durante il normale funzionamento, le operazioni di servizio o quelle di assistenza tecnica, non ricevano radiazioni laser superiori al livello della classe 1.

Avisos sobre el láser

Se certifica que, en los EE.UU., esta impresora cumple los requisitos para los productos láser de Clase I (1) establecidos en el subcapítulo J de la norma CFR 21 del DHHS (Departamento de Sanidad y Servicios) y, en los demás países, reúne todas las condiciones expuestas en la norma IEC 60825-1 para productos láser de Clase I (1).

Los productos láser de Clase I no se consideran peligrosos. La impresora contiene en su interior un láser de Clase IIIb (3b) de arseniuro de galio de funcionamiento nominal a 5 milivatios en una longitud de onda de 770 a 795 nanómetros. El sistema láser y la impresora están diseñados de forma que ninguna persona pueda verse afectada por ningún tipo de radiación láser superior al nivel de la Clase I durante su uso normal, el mantenimiento realizado por el usuario o cualquier otra situación de servicio técnico.

Declaração sobre Laser

A impressora está certificada nos E.U.A. em conformidade com os requisitos da regulamentação DHHS 21 CFR Subcapítulo J para a Classe I (1) de produtos laser. Em outros locais, está certificada como um produto laser da Classe I, em conformidade com os requisitos da norma IEC 60825-1.

Os produtos laser da Classe I não são considerados perigosos. Internamente, a impressora contém um produto laser da Classe IIIb (3b), designado laser de arseneto de potássio, de 5 milliwatts ,operando numa faixa de comprimento de onda entre 770 e 795 nanómetros. O sistema e a impressora laser foram concebidos de forma a nunca existir qualquer possiblidade de acesso humano a radiação laser superior a um nível de Classe I durante a operação normal, a manutenção feita pelo utilizador ou condições de assistência prescritas.

Laserinformatie

De printer voldoet aan de eisen die gesteld worden aan een laserprodukt van klasse I. Voor de Verenigde Staten zijn deze eisen vastgelegd in DHHS 21 CFR Subchapter J, voor andere landen in IEC 60825-1.

Laserprodukten van klasse I worden niet als ongevaarlijk aangemerkt. De printer is voorzien van een laser van klasse IIIb (3b), dat wil zeggen een gallium arsenide-laser van 5 milliwatt met een golflengte van 770-795 nanometer. Het lasergedeelte en de printer zijn zo ontworpen dat bij normaal gebruik, bij onderhoud of reparatie conform de voorschriften, nooit blootstelling mogelijk is aan laserstraling boven een niveau zoals voorgeschreven is voor klasse 1.

Lasermeddelelse

Printeren er godkendt som et Klasse I-laserprodukt, i overenstemmelse med kravene i IEC 60825-1.

Klasse I-laserprodukter betragtes ikke som farlige. Printeren indeholder internt en Klasse IIIB (3b)-laser, der nominelt er en 5 milliwatt galliumarsenid laser, som arbejder på bølgelængdeområdet 770-795 nanometer. Lasersystemet og printeren er udformet således, at mennesker aldrig udsættes for en laserstråling over Klasse I-niveau ved normal drift, brugervedligeholdelse eller obligatoriske servicebetingelser.

Laserilmoitus

Tämä tulostin on sertifioitu Yhdysvalloissa DHHS 21 CFR Subchapter J -standardin mukaiseksi luokan I (1) -lasertuotteeksi ja muualla IEC 60825-1 -standardin mukaiseksi luokan I lasertuotteeksi.

Luokan I lasertuotteita ei pidetä haitallisina. Tulostimen sisällä on luokan IIIb (3b) laser, joka on nimellisteholtaan 5 mW:n galliumarsenidilaser ja toimii 770 - 795 nanometrin aallonpituuksilla. Laserjärjestelmä ja tulostin ovat rakenteeltaan sellaisia, että käyttäjä ei joudu alttiiksi luokkaa 1 suuremmalle säteilylle normaalin käytön, ylläpidon tai huollon aikana.

Huomautus laserlaitteesta

Tämä kirjoitin on Yhdysvalloissa luokan I (1) laserlaitteiden DHHS 21 CFR Subchapter J -määrityksen mukainen ja muualla luokan I laserlaitteiden IEC 60825-1 -määrityksen mukainen.

Luokan I laserlaitteiden ei katsota olevan vaarallisia käyttäjälle. Kirjoittimessa on sisäinen luokan IIIb (3b) 5 milliwatin galliumarsenidilaser, joka toimii aaltoalueella 770 - 795 nanometriä. Laserjärjestelmä ja kirjoitin on suunniteltu siten, että käyttäjä ei altistu luokan I määrityksiä voimakkaammalle säteilylle kirjoittimen normaalin toiminnan, käyttäjän tekemien huoltotoimien tai muiden huoltotoimien yhteydessä.

VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

VARNING! Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

Laser-notis

Denna skrivare är i USA certifierad att motsvara kraven i DHHS 21 CFR, underparagraf J för laserprodukter av Klass I (1). I andra länder uppfyller skrivaren kraven för laserprodukter av Klass I enligt kraven i IEC 60825-1.

Laserprodukter i Klass I anses ej hälsovådliga. Skrivaren har en inbyggd laser av Klass IIIb (3b) som består av en laserenhet av gallium-arsenid på 5 milliwatt som arbetar i våglängdsområdet 770-795 nanometer. Lasersystemet och skrivaren är utformade så att det aldrig finns risk för att någon person utsätts för laserstrålning över Klass I-nivå vid normal användning, underhåll som utförs av användaren eller annan föreskriven serviceåtgärd.

Laser-melding

Skriveren er godkjent i USA etter kravene i DHHS 21 CFR, underkapittel J, for klasse I (1) laserprodukter, og er i andre land godkjent som et Klasse I-laserprodukt i samsvar med kravene i IEC 60825-1.

Klasse I-laserprodukter er ikke å betrakte som farlige. Skriveren inneholder internt en klasse IIIb (3b)-laser, som består av en gallium-arsenlaserenhet som avgir stråling i bølgelengdeområdet 770-795 nanometer. Lasersystemet og skriveren er utformet slik at personer aldri utsettes for laserstråling ut over klasse I-nivå under vanlig bruk, vedlikehold som utføres av brukeren, eller foreskrevne serviceoperasjoner.

Avís sobre el Làser

Segons ha estat certificat als Estats Units, aquesta impressora compleix els requisits de DHHS 21 CFR, apartat J, pels productes làser de classe I (1), i segons ha estat certificat en altres llocs, és un producte làser de classe I que compleix els requisits d'IEC 60825-1.

Els productes làser de classe I no es consideren perillosos. Aquesta impressora conté un làser de classe IIIb (3b) d'arseniür de gal.li, nominalment de 5 mil.liwats, i funciona a la regió de longitud d'ona de 770-795 nanòmetres. El sistema làser i la impressora han sigut concebuts de manera que mai hi hagi exposició a la radiació làser per sobre d'un nivell de classe I durant una operació normal, durant les tasques de manteniment d'usuari ni durant els serveis que satisfacin les condicions prescrites.

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注意：

本打印机被美国认证合乎 DHHS 21 CFR Subchapter I 对分类 I (1) 激光产品的标准，而在其他地区则被认证合乎 IEC 825 的标准。

分类 I 激光产品一般认为不具危险性，本打印机内部含有分类 IIIb (3b) 的激光，在操作过程中会产生 5 毫瓦含镓及砷的微量激光，其波长范围在 770-795 nm 之间。本激光系统及打印机的设计，在一般操作、使用者维护或规定内的维修情况下，不会使人体接触分类 I 以上等级的辐射。

본프린터는 1등급 레이저 제품들에 대한 DHHS 21 CFR Subchapter 3의 규정을 준수하고 있음을 미국에서 인증받았으며, 그외의 나라에서도 IEC 825 규정을 준수하는 1등급 레이저 제품으로서 인증을 받았습니다.

1등급 레이저 제품들은 안전한 것으로 간주됩니다. 본 프린터는 5 밀리와트 갤륨 아르세나이드 레이저로서 770-795 나노미터의 파장대에서 활동하는 Class III (3b) 레이저를 내부에 갖고 있습니다. 본 레이저 시스템과 프린터는 정상 작동 중이나 유지 보수 중 또는 규정된 서비스 상태에서 상기의 Class I 수준의 레이저 방출에 사람이 절대 접근할 수 없도록 설계되어 있습니다.

Lithium warning

	CAUTION This product contains a lithium battery. THERE IS A RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. Discard used batteries according to the battery manufacturer's instructions and local regulations.

Safety information

- The safety of this product is based on testing and approvals of the original design and specific components. The manufacturer is not responsible for safety in the event of use of unauthorized replacement parts.
- The maintenance information for this product has been prepared for use by a professional service person and is not intended to be used by others.
- There may be an increased risk of electric shock and personal injury during disassembly and servicing of this product. Professional service personnel should understand this and take necessary precautions.
- **CAUTION:** When you see this symbol, there is a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you begin, or use caution if the product must receive power in order to perform the task.
- This product contains mercury in the lamp (<5mg Hg). Disposal of mercury may be regulated due to environmental considerations. For disposal or recycling information, contact your local authorities or the Electronic Industries Alliance: www.eiae.org.

Consignes de sécurité

- La sécurité de ce produit repose sur des tests et des agréations portant sur sa conception d'origine et sur des composants particuliers. Le fabricant n'assume aucune responsabilité concernant la sécurité en cas d'utilisation de pièces de rechange non agréées.
- Les consignes d'entretien et de réparation de ce produit s'adressent uniquement à un personnel de maintenance qualifié.
- Le démontage et l'entretien de ce produit pouvant présenter certains risques électriques, le personnel d'entretien qualifié devra prendre toutes les précautions nécessaires.
- **ATTENTION :** Ce symbole indique la présence d'une tension dangereuse dans la partie du produit sur laquelle vous travaillez. Débranchez le produit avant de commencer ou faites preuve de vigilance si l'exécution de la tâche exige que le produit reste sous tension.

Norme di sicurezza

- La sicurezza del prodotto si basa sui test e sull'approvazione del progetto originale e dei componenti specifici. Il produttore non è responsabile per la sicurezza in caso di sostituzione non autorizzata delle parti.
- Le informazioni riguardanti la manutenzione di questo prodotto sono indirizzate soltanto al personale di assistenza autorizzato.
- Durante lo smontaggio e la manutenzione di questo prodotto, il rischio di subire scosse elettriche e danni alla persona è più elevato. Il personale di assistenza autorizzato deve, quindi, adottare le precauzioni necessarie.
- **ATTENZIONE:** Questo simbolo indica la presenza di tensione pericolosa nell'area del prodotto. Scollegare il prodotto prima di iniziare o usare cautela se il prodotto deve essere alimentato per eseguire l'intervento.

Sicherheitshinweise

- Die Sicherheit dieses Produkts basiert auf Tests und Zulassungen des ursprünglichen Modells und bestimmter Bauteile. Bei Verwendung nicht genehmigter Ersatzteile wird vom Hersteller keine Verantwortung oder Haftung für die Sicherheit übernommen.
- Die Wartungsinformationen für dieses Produkt sind ausschließlich für die Verwendung durch einen Wartungsfachmann bestimmt.
- Während des Auseinandernehmens und der Wartung des Geräts besteht ein zusätzliches Risiko eines elektrischen Schlags und körperlicher Verletzung. Das zuständige Fachpersonal sollte entsprechende Vorsichtsmaßnahmen treffen.
- **ACHTUNG:** Dieses Symbol weist auf eine gefährliche elektrische Spannung hin, die in diesem Bereich des Produkts auftreten kann. Ziehen Sie vor den Arbeiten am Gerät den Netzstecker des Geräts, bzw. arbeiten Sie mit großer Vorsicht, wenn das Produkt für die Ausführung der Arbeiten an den Strom angeschlossen sein muß.

Pautas de Seguridad

- La seguridad de este producto se basa en pruebas y aprobaciones del diseño original y componentes específicos. El fabricante no es responsable de la seguridad en caso de uso de piezas de repuesto no autorizadas.
- La información sobre el mantenimiento de este producto está dirigida exclusivamente al personal cualificado de mantenimiento.
- Existe mayor riesgo de descarga eléctrica y de daños personales durante el desmontaje y la reparación de la máquina. El personal cualificado debe ser consciente de este peligro y tomar las precauciones necesarias.
- **PRECAUCIÓN:** este símbolo indica que el voltaje de la parte del equipo con la que está trabajando es peligroso. Antes de empezar, desenchufe el equipo o tenga cuidado si, para trabajar con él, debe conectarlo.

Informações de Segurança

- A segurança deste produto baseia-se em testes e aprovações do modelo original e de componentes específicos. O fabricante não é responsável pela segunrança, no caso de uso de peças de substituição não autorizadas.
- As informações de segurança relativas a este produto destinam-se a profissionais destes serviços e não devem ser utilizadas por outras pessoas.
- Risco de choques eléctricos e ferimentos graves durante a desmontagem e manutenção deste produto. Os profissionais destes serviços devem estar avisados deste facto e tomar os cuidados necessários.
- **CUIDADO:** Quando vir este símbolo, existe a possível presença de uma potencial tensão perigosa na zona do produto em que está a trabalhar. Antes de começar, desligue o produto da tomada eléctrica ou seja cuidadoso caso o produto tenha de estar ligado à corrente eléctrica para realizar a tarefa necessária.

Informació de Seguretat

- La seguretat d'aquest producte es basa en l'avaluació i aprovació del disseny original i els components específics.
  El fabricant no es fa responsable de les qüestions de
  seguretat si s'utilitzen peces de recanvi no autoritzades.
- La informació pel manteniment d'aquest producte està orientada exclusivament a professionals i no està destinada
  a ningú que no ho sigui.
- El risc de xoc elèctric i de danys personals pot augmentar durant el procés de desmuntatge i de servei d'aquest producte. El personal professional ha d'estar-ne assabentat i prendre
  les mesures convenients.
-
  PRECAUCIÓ: aquest símbol indica que el voltatge de la part de l'equip amb la qual esteu treballant és perillós. Abans de començar, desendolleu l'equip o extremeu les precaucions si, per treballar amb l'equip, l'heu de connectar.

안전 사항

- 본 제품은 원래 설계 및 특정 구성품에 대한 테스트 결과로 안정성이 입증된 것입니다. 따라서 무허가 교체부품을 사용하는 경우에는 제조업체에서 안전에 대한 책임을 지지 않습니다.
- 본 제품에 관한 유지 보수 설명서는 전문 서비스 기술자 용으로 작성된 것이므로, 비 전문가는 사용할 수 없습니다.
- 본 제품을 해체하거나 정비할 경우, 전기적인 충격을 받거나 상처를 입을 위험이 커집니다. 전문 서비스 기술자는 이 사실을 숙지하고, 필요한 예방 조치를 취하도록 하십시오.
-
  주의: 이 표시는 해당영역에서 고압전류가 흐른다는 위험표시 입니다. 시작전에 플러그를 뽑으시거나, 주의를 기울여 주시기 바랍니다.

安全信息

- 本产品的安全性以原来设计和特定产品的测试结果和认证为基础。万一使用未经许可的替换部件，制造商不对安全性负责。
- 本产品的维护信息仅供专业服务人员使用，并不打算让其他人使用。
- 本产品在拆卸、维修时，遭受电击或人员受伤的危险性会增高，专业服务人员对这点必须有所了解，并采取必要的预防措施。
-
  切记：当您看到此符号时，说明在您工作的产品区域有危险电压的存在。请在开始操作前拔掉产品的电源线，或者在产品必须使用电源来执行任务时，小心从事。

Preface

This manual contains maintenance procedures for service personnel. It is divided into the following chapters:

1. **General information** contains a general description of the printer and the maintenance approach used to repair it. Special tools and test equipment, as well as general environmental and safety instructions, are discussed.
2. **Diagnostic information** contains an error indicator table, symptom tables, and service checks used to isolate failing field replaceable units (FRUs).
3. **Diagnostic aids** contains tests and checks used to locate or repeat symptoms of printer problems.
4. **Repair information** provides instructions for making printer adjustments and removing and installing FRUs.
5. **Connector locations** uses illustrations to identify the connector locations and test points on the printer.
6. **Preventive maintenance** contains the lubrication specifications and recommendations to prevent problems.
7. **Parts catalog** contains illustrations and part numbers for individual FRUs.
   Appendix A contains service tips and information.
   Appendix B contains representative print samples.

Conventions

Note: A note provides additional information.

Warning: A warning identifies something that might damage the product hardware or software.

There are several types of caution statements:

	CAUTION A caution identifies something that might cause a servicer harm.

	CAUTION This type of caution indicates there is a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you begin, or use caution if the product must receive power in order to perform the task.

	CAUTION This type of caution indicates a hot surface.

	CAUTION This type of caution indicates a tipping hazard.

1. General information

The Lexmark™ X54x series are color laser MFPs that combine print, scan, copy, and fax functions. The X54x series are the ideal MFPs for presentations, business graphics, line art, and text. They use laser diode electrophotographic technology to deliver remarkable quality print images and text. The scan and copy functions work with A4, letter, and legal (ADF only) size paper. Photographic quality images are possible with scan function. The FAX function delivers a wide range of functionality to the office user. The MFPs can be used as shared network or desktop devices.

Models

The Lexmark X54x series MFPs are available in the following models:

Model	Configuration	Machine type / model
X543dn	Print, copy, simplex scan, network	7525-131
X543dn	Print, copy, simplex scan, network. DBCS op panel	7525-133
X543dn	Print, copy, simplex scan, network[1]	7525-138
X544n	Print[2], copy, duplex scan, network, fax	7525-356
X544n	Print[2], copy, duplex scan, network	7525-352
X544dn	Print, copy, duplex scan, network, fax	7525-336
X544dn	Print, copy, duplex scan, network	7525-332
X544dn	Print, copy, duplex scan, network, fax. DBCS op panel.	7525-337
X544dn	Print, copy, duplex scan, network. DBCS op panel	7525-333
X544dw	Print, copy, duplex scan, network[1], fax	7525-386
X544dw	Print, copy, duplex scan, network[1]	7525-382
X544dw	Print, copy, duplex scan, network[1], fax, DBCS op panel	7525-387
X544dw	Print, copy, duplex scan, network[1], DBCS op panel	7525-383
X544dtn	Print, copy, duplex scan, network, fax.	7525-336 (bundled w/650-sheet optional tray)
X544dtn	Print, copy, duplex scan, network.	7525-332 (bundled w/650-sheet optional tray)
X544dtn	Print, copy, duplex scan, network, fax, DBCS op panel	7525-337 (bundled w/650-sheet optional tray)
X544dtn	Print, copy, duplex scan, network, DBCS op panel	7525-333 (bundled w/650-sheet optional tray)

1. Wireless network
2. Simplex printing only

Options and features

Certain options are available on selected printer models only.

Available options include:

- 650-Sheet Duo Drawer—a 550-sheet drawer with a 100-sheet multipurpose feeder (MP Feeder).
- Additional memory—One 128, 256, or 512MB memory card may be added.
- Flash memory card—One 64MB may be added.
- Font cards—One

Memory

✔—Supported ✘—Not supported	**Lexmark X543**	**Lexmark X544n, X544dn, X544dtn**	**Lexmark X544dw**
Memory			
Optional slots	One slot		
Standard DIMM sizes[a]	128MB		
Optional (DDR2)	128MB, 256MB, and 512MB		
Maximum printer memory[b]	640MB		
Flash memory	64 MB		
Option Slots (single slot is available or either font or flash memory card)			
Font card support	1 font card		
Optional user flash memory card sizes	0MB	64MB	64MB
Connections			
USB 2.0 High Speed	✔	✔	✔
Ethernet 10/100 BaseTx	✔	✔	✔
USB-A (allows direct USB printing using approved USB flash memory device)	✘	✔	✔
Pict Bridge (allows printing photos directly from a compatible camera)	✘	✔(Only on FAX equipped machines)	✔(Only on FAX equipped machines)
Wireless standard 802.11 b/g/n	✘	✔	✔

[a] Dual Inline Memory Module. An optional memory card that can be plugged into an available memory slot.
[b] The maximum usable DDRSDRAM is standard (soldered) plus 512MB.

Print quality

During the life of the printer, components are subject to wear based on usage. Printers continuously operating at or near the maximum duty cycle may require service for replacement of these components to ensure high-quality printing and good performance throughout the life of the printer. Replacement is recommended every 60,000 pages for the fuser and 60,000 pages for the ITU. Replacement is recommended every 30,000 pages for the imaging unit.

- 4800C Q (default) full printer speed
- 1200 dpi (reduced printer speed) is supported in PS and PCL only

Connectivity (network support)

✔—Supported ✘—Not supported **Network protocol**	**Lexmark X543**	**Lexmark X544n, X544dn, X544dtn**	**Lexmark X544dw**
Standard Ethernet 10/100 Base T	✔	✔	✔
Standard USB-B (Full speed) device port	✔	✔	✔
USB-A host ports (In front, low/full speed) This port only supports the following flash drives and file types: Supported flash drives: Lexar Jump Drive 2.0 Pro (256/512 MB/1G size) or SanDisk Cruzer Mini (256/512 MB/1 G size) Supported file types: .pdf, .gif, .jpeg, .jpg,.bmp, .png, .tiff, .tif, .pcx, .dcx	✘	✔	✔
802.11n Wireless Network card Manufacturing installs the wireless card during the fabrication process. A wireless card CANNOT be installed post-manufacturing.	✘	✘	✔
USB direct drive	Scan and print (Select formats)	Scan and print (Select formats)	Scan and print (Select formats)

Operating modes

Mode	Description
Normal	Factory default
Quiet	Designed for customers where noise levels are a very important factor. • Print quality is maintained at factory default level. • Speed is reduced.
Eco-mode (Energy and Energy + Paper	Designed for customers where the environment is a key factor. There are three options; Energy, Paper, and Energy+ Paper. • Print quality is maintained. • Power Saver is set to one minute. • Fuser standby is off. • The operator panel back light is off. • Power supply energy consumption is reduced. • Duplex is on if **Energy + Paper** is selected (duplex models only) (can be overwritten by the driver.)

Data streams

✔—Supported ✘—Not supported **Data streams**	**Lexmark X543**	**Lexmark X544n, X544dn, X544dtn**	**Lexmark X544dw**
PCL 6 emulation	✔	✔	✔
PostScript Level III emulation Version 3011 of the Adobe definition of PostScript 3 is supported.	✔	✔	✔
PDF Supports version 1.6	✘	✔	✔
PPDS By default, the PPDS interpreter is inactive. A user can activate the data stream by PJL or by the **PPDS Emulation** setting in the Configuration Menu	✘	✔	✔
Pict Bridge	✘	✔	✔
Directimage Devices that support Directimage support all of the following graphics formats: TIFF, TIF, JPEG, JPG, GIF, PNG, BMP, PCX, and DCX.	✘	✔	✔
Host-Based Printing (HBP)/ Graphics Device Interface (GDI) Version 3 (color) uses PCL XL.	✔	✔	✔

Dimensions

Models	Height	Width	Depth	Weight
Lexmark X543	291 mm (11.5 in.)	424 mm (16.7 in.)	400 mm (15.7 in.)	21 kg (46.2 lbs)
Lexmark X544n, X544dn, X544dtn, X544dw	422 mm (16.6 in.)	424 mm (16.7 in.)	416 mm (16.4 in.)	25 kg (54.9 lbs)
650-sheet Duo Drawer	133 mm (5.2 in.)	424 mm (16.7 in.	416 mm (16.4 in.)	4 kg (8.7 lb)

Clearances

	Description	Dimensions
		All models
1	Rear	100 mm (3.9 in.)
2	Front	482.6 mm (19 in.)
3	Right side	100 mm (3.9 in.)
4	Left side	100 mm (3.9 in.)
5	Above	360 mm (14 in.)*
* Add 133 mm (5.2 in.) to the top if you want to add an optional 650-sheet Duo Drawer (Lexmark X54x models only).		

Power and electrical specifications

The following table specified nominal average power requirements for the base printer configurations. All power levels are shown in Watts (W). Maximum current is given in Amperes (A).

Printing states	**Lexmark 543dn**	**Lexmark X544dw, X544dn, and X544dtn**	**Lexmark X544n**
Average power while printing			
Continuous copy	480 W	510 W	510 W
Continuous printing simplex	480 W	540 W	540 W
Continuous printing automatic duplex*	340 W	370 W	n/a
Average power while idle			
Power Saver	22 W	24 W 23 W (dn only)	23 W
Stanby	45 W	50 W	50 W
Off	0 W		
* Automatic duplex is not supported on the X544n.			

Low-voltage models

- 100 to 127 volts (V) (100 – 110 Japan) at 50 to 60 hertz (Hz) nominal
- 90 to 137 volts (90 – 110 Japan), extreme

100 voltage models

- 100 V ac at 47 to 63 hertz (Hz) nominal
- 90 to 110 V ac, extreme

High-voltage models

- 220 to 240 V ac at 50 to 60 hertz (Hz) nominal (not available in all countries)
- 198 to 259 V ac, extreme

Notes:

- Using a 220 V ac to 110 V ac power converter with a low voltage printer is not recommended.
- Using an inverter to change DC to AC voltage (12 V to 120 V for example) is not recommended.
- All X54x MFP models will comply with the ENERGY STAR.
- All models ship with Power Saver Mode = On.
- The default timeout to Power Saver = 60 minutes (220V).
- Power Saver can be adjusted to 1-240 minutes.
- Power Saver mode cannot be disabled from the operator panel.

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Acoustics

All acoustic measurements are made in accordance with ISO 7779-1999 and reported in conformance with ISO9296:1988-04-15.

Operating mode	**1-Meter average sound pressure at 4800 CQ**	
	Lexmark X543	**Lexmark X544**
Printing (simplex mono)	46 dBA	46 dBA
Printing (simplex color)	47 dBA	47 dBA
Printing (automatic duplex mono)	50 dBA	50 dBA
Printing (automatic duplex color)	50 dBA	51 dBA
Copy ADF (Mono)	50 dBA	49 dBA
Copy ADF (Color)	50 dBA	50 dBA
Scan ADF (Mono)	47 dBA	45 dBA
Scan ADF (Color)	46 dBA	45 dBA
Idle	Inaudible	Inaudible
Quiet Mode (simplex mono)	45 dBA	45 dBA
Quiet Mode (simplex duplex)	45 dBA	45 dBA

Environment specifications

Environment	**Specifications**
Operating	
Air temperature—operating	15.6 to 32.20° C (60 to 90.0° F)
Air temperature—power off	10.0 to 43.30° C (50 to 110.0° F)
Air relative humidity	Relative Humidity 8 to 80%
Wet bulb temperature—operating	22.80° C (73.0° F) maximum
Web bulb temperature—power off	26.70° C (80.10° F) maximum
Altitude	0–3,048 meters (10,000 ft.)
Atmospheric pressure	74.6 kPa
Ambient operating environment*	15.6 to 32.2° C (60 to 90° F) and 8% to 80% RH
Ship / Storage	
Cartridges	-40 to 43.3° C (-40 to 110.0° F)
Printer with cartridges	-40 to 43.3° C (-40 to 110.0° F)
Printer without cartridges	-40 to 43.3° C (-40 to 110.0° F)
Air relative humidity	Relative Humidity 8 to 80%
Altitude	10,300 meters (34,000 feet)
Web bulb temperature—power off	26.70° C (80.10° F) Maximum
* In some cases performance specifications (such as paper OCF, EP cartridge usage) are specified to be measured at an ambient condition.	

Media handling

Input and output sources

Sheet numbers are assuming 20 lb. xerographic paper	**Lexmark X543**	**Lexmark X544dw, X544dn, X544dtn**	**Lexmark X544n**
Standard input sources			
Standard input tray (250-sheet tray)	250 sheets	250 sheets	250 sheets
Manual feed slot (1-sheet)	1 sheet	1 sheet	1 sheet
Second tray capacity (650-sheet Duo Drawer)	550 sheets	550 sheets	550 sheets
Multipurpose try capacity (650-sheet Duo Drawer)	100 sheets	100 sheets	100 sheets
Optional input sources (maximum 1, total of all inputs is 4)			
650-sheet Duo Drawer[a] (includes 100-sheet MP feeder)	550 sheets (or 100 sheets in MP feeder)	550 sheets (or 100 sheets in MP feeder)	550 sheets (or 100 sheets in MP feeder)
Maximum total input capacity	901	901	901
Duplex			
Type of duplex	Integrated duplex	Integrated duplex	n/a
Standard output sources (no optional output sources are available)			
Standard 100-sheet bin	100	100	100

a In the 650-sheet Duo Drawer, the 550-sheet tray and the integrated MP feeder count as two independent input sources. The MF feeder is configured as “cassette” does not show up as Configure MP in the Paper Menu.

Duplex capability

✔—Supported **Models**	**Duplex Type** **Automatic duplex**
Lexmark X543dn	✔
Lexmark X544n	
Lexmark X544dn	✔
Lexmark X544dw	✔
Lexmark X544dtn	✔

x

Media input size specifications

✔—Supported **without** size sensing ✘—Not supported **Input source**	**250-sheet tray**	**Optional 650-sheet Duo Drawer**	**MP feeder[a] (in the 650-sheet Duo Drawer)**	**Manual slot**	**Duplex**
A4 210 x 297mm	✔	✔	✔	✔	✔
A5[a] 148 x 210mm	✔	✔	✔	✔	✘
A6	✘	✘	✔	✔	✘
JIS[b] **B5**[a] 182 x 257mm	✔	✔	✔	✔	✔
JIS[b] **B4**	✘	✘	✘	✘	✘
Letter 8.5 x 11 in.	✔	✔	✔	✔	✔
Legal 8.5 x 14 in.	✔	✔	✔	✔	✔
Executive 7.25 x 10.5 in.	✔	✔	✔	✔	✘
Oficio (Mexico)[d]	✔	✔	✔	✔	✔
Folio[d] 8.5 x 13 in.	✔	✔	✔	✔	✔
Statement 5.5 x 8.5 in.	✘	✘	✔	✔	✘
Universal[c] 148 x 210mm to 215.9 x 355.6mm (5.83 x 8.27 in. to 8.5 x 14 in.)	✔	✔	✔	✔	✘
76.2.x 127mm to 215.9 x 355.6mm (3 x 5 in. to 8.5 x 14 in.)	✘	✘	✔	✔	✘
210mm x 279.4mm to 215.9mm x 355.6mm (8.27 in. x 11 in. to 8.5 in. to 14 in.)	✔	✔	✔	✔	✔
7¾ Envelope[a] 98.4 x 190.5mm	✘	✘	✔	✔	✘
9 Envelope[a]	✘	✘	✔	✔	✘
10 Envelope[a] 104.8 x 241.3mm (4.12 x 9.5 in.)	✘	✘	✔	✔	✘
DL Envelope[a] 110 x 220mm (4.33 x 8.66 in.)	✘	✘	✔	✔	✘
C5 Envelope[a] 162 x 229mm (6.38 x 9.01 in.)	✘	✘	✔	✔	✘

✔—Supported **without** size sensing ✘—Not supported **Input source**	**250-sheet tray**	**Optional 650-sheet Duo Drawer**	**MP feeder[a] (in the 650-sheet Duo Drawer)**	**Manual slot**	**Duplex**
B5 Envelope[a]	✘	✘	✔	✔	✘
Other envelope[a] Length: 98.4–431.8mm (3.8–17 in.) Width: 89–297mm (3.5–11.7 in.)	✘	✘	✔	✔	✘

[a] The MP feeder runs slower if A5, statement, B5, or envelope are loaded.

[b] Japanese Industry Standard.

[c] Although the user may select Universal paper size for these sources, not all tray guides can be adjusted to all Universal media sizes.

[d] If a source supports size sensing and this features is activated, then neither Oficio or Folio appear in the list of supported media sizes. These values only appear in a list of supported media sizes when the source is non-size sensing or the size sensing is deactivated.

Media input type specifications

✔—Supported ✘—Not supported **Input type**	**250-sheet tray**	**Optional 650-sheet Duo Drawer**	**MP feeder (in 650-sheet Duo Drawer)**	**Manual feeder[a]**	**Duplex**
Plain paper	✔	✔	✔	✔	✔
Card stock	✔	✔	✔	✔	✘
Transparency	✔	✔	✔	✔	✘
Recycled[b]	✔	✔	✔	✔	✔
Glossy	✔	✔	✔	✔	✔
Heavy glossy	✘	✘	✘	✘	✘
Paper-backed labels	✔	✔	✔	✔	
Bond	✔	✔	✔	✔	✔
Envelopes	✘	✘	✔	✔	✘
Rough envelopes	✘	✘	✔	✔	✘
Letterhead	✔	✔	✔	✔	✔
Preprinted	✔	✔	✔	✔	✔

✔—Supported ✘—Not supported **Input type**	**250-sheet tray**	**Optional 650-sheet Duo Drawer**	**MP feeder (in 650-sheet Duo Drawer)**	**Manual feeder[a]**	**Duplex**
Colored paper	✔	✔	✔	✔	✔
Light paper	✔	✔	✔	✔	✔
Heavy paper	✔	✔	✔	✔	✔
Rough or cotton	✔	✔	✔	✔	✔
Custom type <*x*>[b]	✔	✔	✔	✔	✔

[a] For MP feeder and manual feeders the Default Source Menu displays Manual Paper and Manual Env. Select **Manual Env.** for envelopes or when the type in Custom Type <x> is an envelope. For other types, use **Manual Paper**.

[b] The duplex unit supports this media type as long as the customer has selected the custom type from those types the duplex unit supports.

Media output size and type

There is a single 100-sheet output bin available for this printer and no additional output options.

Weight ranges for each media type

Material	Type	Weight	Select
Paper [2, 5, 7, 8]	Xerographic or business paper	60 to 74. 9 g/m^2 grain long (16 to 19.9 lb bond) [2, 5]	Light Paper
		75 to 89.9 g/m^2 grain long (20 to 23.8 lb bond)	Plain Paper
		90. to 104.9 g/m^2 grain long (23.9 to 27.8 lb bond)	Heavy Paper
		105 to 176 g/m^2 grain long (27.9 to 47 lb bond) [7]	Card stock
Specialty papers	Gloss Book	88 to 176 g/m^2 grain long (60 to 120 lb book)	
	Gloss Cover	162 to 176 g/m^2 grain long (60 to 65 lb cover)	
Card stock—upper limit (grain long) [1]	Index Bristol	120 g/m^2 (67 lb)	
	Tag	120 g/m^2 (74 lb)	
	Cover	135 g/m^2 (50 lb)	
Card Stock—upper limit (grain short) [1]	Index Bristol	163 g/m^2 (90 lb)	
	Tag	163 g/m^2 (100 lb)	
	Cover	176 g/m^2 (65 lb)	
Transparency [6]	Laser printer	170 to 180 g/m^2 (45 to 48 lb bond)	
Labels—upper limit	Paper	131 g/m^2 (35 lb bond)	
Envelopes (Multipurpose feeder or manual slot only)	Sulfite, wood-free or up to 100% cotton bond	60 to 105 g/m^2 to 28 lb bond)[3, 4]	

[1] For 60 to 176 g/m^2 paper, grain long fibers are recommended.
[2] Paper less than 75 g/m^2 (20 lb) must be printed with Paper Type set to **Light Paper**.
[3] 100% cotton content maximum weight is 24 lb bond.
[4] 28 lb bond envelopes are limited to 25% cotton content.
[5] The duplex unit supports paper weights between 60–105 g/m^2 (16–28 pound) grain long bond. The duplex unit does not support card stock, transparencies, envelopes, and labels.
[6] Lexmark transparency part numbers 12A8240, and 12A8241 are supported from the standard tray, manual slot and the multipurpose feeder.
[7] Paper 90 to 104.9 g/m^2 (23.9 to 27.8 lb) must be printed with Paper Type set to **Heavy Paper**.
[8] Paper 105 to 176 g/m^2 (27.9 to 47 lb) must be printed with Paper Type set to **Cardstock.**

Media guidelines

Paper characteristics

The following paper characteristics affect print quality and reliability. Consider these characteristics when evaluating new paper stock.

- **Weight**—The printer can automatically feed paper weights from 60 to 176 g/m^2 (16 to 47 lb bond) grain long. Paper lighter than 75 g/m^2 (20 lb) might not be stiff enough to feed properly, causing jams. For best performance, use 80 g/m^2 (21 lb bond) grain long paper. For paper smaller than 182 x 257 mm (7.2 x 10.1 in.), we recommend 90 g/m^2 or heavier paper.
- **Curl**—Curl is the tendency for paper to curl at its edges. Excessive curl can cause paper feeding problems. Curl can occur after the paper passes through the printer, where it is exposed to high temperatures. Storing paper unwrapped in hot, humid, cold, or dry conditions, even in the trays, can contribute to paper curling prior to printing and can cause feeding problems.
- **Smoothness**—Paper smoothness directly affects print quality. If paper is too rough, toner cannot fuse to it properly. If paper is too smooth, it can cause paper feeding or print quality issues. Always use paper between 100 and 300 Sheffield points; however, smoothness between 150 and 200 Sheffield points produces the best print quality.
- **Moisture content**—The amount of moisture in paper affects both print quality and the ability of the printer to feed the paper correctly. Leave paper in its original wrapper until it is time to use it. This limits the exposure of paper to moisture changes that can degrade its performance. Condition paper before printing by storing it in its original wrapper in the same environment as the printer for 24 to48 hours before printing. Extend the time several days if the storage or transportation environment is very different from the printer environment. Thick paper may also require a longer conditioning period.
- **Grain direction**—Grain refers to the alignment of the paper fibers in a sheet of paper. Grain is either grain long, running the length of the paper, or grain short, running the width of the paper. For 60 to 176 g/m^2 (16 to 47 lb bond) paper, use grain long fibers.
- **Fiber content**—Most high-quality xerographic paper is made from 100% chemically treated pulped wood. This content provides the paper with a high degree of stability resulting in fewer paper feeding problems and better print quality. Paper containing fibers such as cotton possesses characteristics that can negatively affect paper handling.

Unacceptable paper

The following paper types are not recommended for use with the printer:

- Preprinted papers with chemicals that may contaminate the printer
- Preprinted papers that can be affected by the temperature in the printer fuser
- Coated papers (erasable bond), synthetic papers, thermal papers
- Rough-edged, rough or heavily textured surface papers, or curled papers
- Recycled papers containing more than 25% post-consumer waste that do not meet DIN 19 309, and weighing more than 80 g/m^2
- Paper weighing less than 80 g/m^2 (21 lb)
- Multiple-part forms or documents

Selecting paper

Using appropriate paper prevents jams and helps ensure trouble-free printing. To help avoid jams and poor print quality:

- Always use new, undamaged paper.
- Before loading paper, know the recommended print side of the paper. This information is usually indicated on the paper package.
- Do not use paper that has been cut or trimmed by hand.
- Do not mix paper sizes, types, or weights in the same source; mixing results in jams.
- Do not use coated papers unless they are specifically designed for electrophotographic printing.

Selecting preprinted forms and letterhead

Use these guidelines when selecting preprinted forms and letterhead:

- Use grain long for 60 to 176 g/m^2 weight paper.
- Use only forms and letterhead printed using an offset lithographic or engraved printing process.
- Avoid papers with rough or heavily textured surfaces.

Use papers printed with heat-resistant inks designed for use in xerographic copiers. The ink must be able to withstand temperatures up to 200°C (392°F) without melting or releasing hazardous emissions. Use inks that are not affected by the resin in toner. Inks that are oxidation-set or oil-based generally meet these requirements; latex inks might not. When in doubt, contact the paper supplier.

Preprinted papers such as letterhead must be able to withstand temperatures up to 200°C (392°F) without melting or releasing hazardous emissions.

Storing paper

Use these paper storage guidelines to help avoid jams and uneven print quality:

- For best results, store paper where the temperature is 21°C (70°F) and the relative humidity is 40%. Most label manufacturers recommend printing in a temperature range of 18 to 24°C (65 to 75°F) with relative humidity between 40 and 60%.
- Store paper in cartons when possible, on a pallet or shelf, rather than on the floor.
- Store individual packages on a flat surface.
- Do not store anything on top of individual paper packages.

Using recycled paper and other office papers

As an environmentally conscious company, Lexmark supports the use of recycled office paper produced specifically for use in laser (electrophotographic) printers. In 1998, Lexmark presented to the US government a study demonstrating that recycled paper produced by major mills in the US fed as well as non-recycled paper. However, no blanket statement can be made that all recycled paper will feed well. Lexmark consistently tests its printers with recycled paper (20–100% post-consumer waste) and a variety of test paper from around the world, using chamber tests for different temperature and humidity conditions. Lexmark has found no reason to discourage the use of today's recycled office papers, but generally the following property guidelines apply to recycled paper.

- Low moisture content (4–5%)
- Suitable smoothness (100–200 Sheffield units, or 140–350 Bendtsen units, European)
  Note: Some much smoother papers (such as premium 24 lb laser papers, 50–90 Sheffield units) and much rougher papers (such as premium cotton papers, 200–300 Sheffield units) have been engineered to work very well in laser printers, despite surface texture. Before using these types of paper, consult your paper supplier.
- Suitable sheet-to-sheet coefficient of friction (0.4–0.6)
- Sufficient bending resistance in the direction of feed

Recycled paper, paper of lower weight (<60 g/m^2 [16 lb bond]) and/or lower caliper (<3.8 mils [0.1 mm]), and paper that is cut grain-short for portrait (or short-edge) fed printers may have lower bending resistance than is required for reliable paper feeding. Before using these types of paper for laser (electrophotographic) printing, consult your paper supplier. Remember that these are general guidelines only and that paper meeting these guidelines may still cause paper feeding problems in any laser printer (for example, if the paper curls excessively under normal printing conditions).

Digital imaging specifications

General specifications

ADF Scan speed

Simplex ADF - Up to 25 ppm

Duplex ADF - Up to 35 ppm (page sides)

ADF Document handling

ADF input capacity - 50 sheets.

ADF output capacity - 50 sheets.

ADF document width - 4.9” (125mm) to 8.5”(216mm)

ADF document length - 5” (127mm) to 14.0”(356mm)

Resolution and color depth

- Resolution - 1200 dpi optical
- CDD 1200 dpi, and 600 dpi. Selectable through electronics
- Color depth - 48 bit RGB output. 16 bit / channel

Flatbed document specifications

- Document size- Up to A4 and letter
  4.5” x 5.5” to 8.5”x11” (SEF)

Flatbed speed

3 seconds to scan, 3 seconds to return.

Scanner operating environments

- Temperature - 10C to 35C
- Humidity - 15% RH to 85% RH

Storage environments

- Temperature - -20C to 43C
- Humidity - 5%RH to 95% RH

Tilt

This device should operate within the stated parameters when it is level within 10mm from front to back and 10mm side to side.

Scan and copy specific specifications

Scan Resolutions

- Optical - 600 dpi (Local Twain only)
- Enhanced (vial Lexmark Scan Center) - 1200 X 1200 dpi, 2400 X 2400 dpi, 4800 X 4800 dpi, 9600 X 9600 dpi, 19200 X 19200 dpi

Output resolutions

- Mono - 600 X 600 dpi
- Color - 300 X 300 dpi

Duplex scan

Duplex and copy is available only on X544 series machines.

Scan file output formats

- TIFF
- JPEG
- PDF

Supported compressions

- PDF - (1 bit,- JBIG2 CCIT G4, Flate), (8/24 bit - Flate JPEG)
- TIFF - (1 bit - CCITT G4), (8/24 bit - Packbits, LZW)
- JPG - (8/24 bit-JPG)

Supported scan destinations

- Temporary profile from a user's PC
- Scan to PC via network TWAIN
- Scan to PC using Web applet
- Scan to E-Mail
- Scan to USB (X544 models only)
- Lexmark Scan Center

Multiple copies

999 copies maximum

Reduce / Enlarge

-25% to 400%

Fax specifications

Phone network connectivity

Phone networks types supported	PSTN or analog PABX (RJ-11)
ITU COMPATIBILITY Standard Resolution Fine Superfine Ultrafine Coding	Group 3/ECM 8 x 3.85 pels/mm (200X100dpi) (204x98) 8 x 7.7 pels/mm (200X200dpi) (204x196) 11.8 x 11.8 pels/mm(300x300 dpi) (204x391) 15.7 x 15.7 pels/mm (400x400 dpi) (408x391) ITU T.4 and T.6(MH, MR, MMR, JPEG)
Modem speed	V.34 2,400-33,600 BPS, V.17 7,200-14,400 BPS, V.27 2,400-4,800 BPS, V.29 7,200-9,600 BPS
Compression	MH, MR, MMR, JPEG
Error correction	ITU T.30
Line interface selection	
Modular Plug Out Band Signal Level	Dual RJ-11C Guaranteed North American and Europe PTT standard
Input Level Range Ring Detection	-16dBm ~ -59dBm Complies with all regulatory requirements

Fax resolutions

Receive	200x100 dpi, 200x200 dpi, 300x300 dpi, 400x400 dpi, 204x98 dpi, 204x196 dpi, 204x391 dpi, 408x391 dpi
Send	200x100dpi, 200x200 dpi, 300x300 dpi

Miscellaneous FAX specifications

Fax memory	4 MB Flash (More than 320 pages based on ITU chart #1) User selectable parameters are stored in NVRAM.
Speed dial	Yes. 999 entries
Transmission	Approximately 3 seconds per page
Color fax	Yes
Fax from PC	Yes. Supported using PostScript driver for both local and network attach modes.
Caller ID	Yes
Junk FAX blocking	Yes - based on caller ID and remote station ID
Tone/Pulse	Tone: Default, Pulse: Yes
Fax forward	Yes
Broadcasting	Yes. 12 destinations
External phone interface	Yes
Manual mode	Yes
Fax shortcuts	Yes.
Fax content	Text, text/photo, photo
Fax perseveration	Yes
Halftoning	Yes

Tools required for service

Flat-blade screwdrivers, various sizes
#1 Phillips screwdriver, magnetic
#2 Phillips screwdriver, magnetic
#2 Phillips screwdriver, magnetic short-blade
7/32 inch (5.5 mm) open-end wrench
7.0 mm nut driver
Needlenose pliers
Diagonal side cutters
Spring hook
Feeler gauges
Analog or digital multimeter
Parallel wrap plug 1319128
Flash light (optional)

Acronyms.

ac	Alternating Current
ACM	Autocompensator Mechanism (or paper feed)
ADF	Automatic document feeder
AFE	Analog front end
AIO	All-In-One
APS	Automatic Paper Size
ASIC	Application Specific Integrated Circuit
BLDC	Brushless DC Motor
BOR	Black Only Retract
BUD	Belt up down
C	Cyan
CCD	Charge-Couple Device
CCFL	Cold Cathode Fluorescent Lamp
CCW	Counter clockwise
CDB	Command Descriptor Blocks
CMYK	Cyan yellow magenta black
CPU	Central processing unit
CRC	Cyclic redundancy check
CRU	Customer Replaceable Unit
CSU	Customer Setup
CW	Clockwise
DBCS	Double byte character set
dc	Direct Current
DIMM	Dual Inline Memory Module
DLE	Downloadable emulator
DRAM	Dynamic random access memory
DVM	Digital multimeter
ECC	Error correcting code
ECM	Error correction mode
EDO	Enhanced Data Out
EEPROM	Electrical Erasable Programmable Read-Only Memory
ENA	External Network Adapter
EOL	End of line
EP	Electrophotographic process
EPROM	Erasable programmable read-only memory
ESD	Electrostatic Discharge
FB	Flatbed
FD	Facedown
FRU	Field replaceable unit
FU	Face up
GB	Gigabyte
GFI	Ground Fault Interrupter
GHz	Gigahertz
HBP	Host Based Printing
HCF	High-capacity feeder
HCIT	High-capacity Input Tray
HCOF	High-Capacity Output Finisher
HCPF	High-capacity feeder
HTML	Hypertext markup language
HV	High Voltage
HVPS	High voltage power supply

HVU	High voltage unit
Hz	Hertz
INTL	International
ITC	Internal Tray Card
ITU	Image Transfer Unit
K	Black (Key)
LAN	Local area network
LASER	Light amplification by stimulated emission of radiation
LCD	Liquid crystal display
LCM	Liquid Crystal Module
LD	Laser Diode
LED	Light emitting diode
LEF	Long edge feed
LES	Lexmark Embedded Solution (applications)
LSU	Laser Scanning Unit
LV	Low Voltage
LVPS	Low voltage power supply
M	Magenta
MB	Megabyte
MDC	Motor Driver Control
MFD	Multifunction Device
MFP	Multifunction Printer
MH	Message handling
MIF	Motor interface
mm	Millimetre
MMR	Modified modified read
MPF	Multipurpose feeder
MR	Modem ready
MROM	Masked Read Only Memory
MS	Microswitch
NAND	NAND (usage: NAND gate)
NVM	Nonvolatile Memory
NVRAM	Nonvolatile Random Access Memory
OCF	Operator correctable failure
OCR	Oil coating roll
OEM	Original Equipment Manufacturer
OHP	Overhead projector
OPC	Optical photo conductor
OPT	Optical Sensor
PC	Photoconductor
PDF	Portable Document Format
PICS	Problem isolation charts
PIN	Personal identification number
PIXEL	Picture element
PJL	Printer Job Language
POR	Power-on reset
POST	Power-on self test
PPDS	Personal Printer Data Stream
ppm	Pages per minute
PQET	Print Quality Enhancement Technology
PRC	Peoples' Republic of China
PSC	Parallel Synchronous Communications
PSD	Position Sensing Device
PSO	Participating Standards Organization

PWM	Pulse Width Modulation
RAM	Random access memory
RFID	Radio frequency identification
RH	Relative humidity
RIP	Raster image processor
ROM	Read-only memory
ROS	Read-only storage
RPM	Revolutions Per Minute
SCC	Scanner Control Card
SDRAM	Synchronous Dynamic Random Access Memory
SEF	Short edge feed
SIMM	Single Inline Memory Module
SOL	Solenoid
SOS	Start of scan
SRAM	Static random access memory
TAR	Toner Add Roll
TPS	Toner Patch Sensing
TTM	Tandem Tray Module
TVOC	Total Volatile Organic Compound
UAT	Universally Adjustable Tray
UPR	Used Parts Return
USB	Universal Serial Bus
V	Volts
V ac	Volts alternating current
V dc	Volts direct current
VOIP	Voice over internet protocol
VOM	Volt Ohmmeter
VTB	Vacuum Transport Belt
XPS	XML Paper Specification
Y	Yellow

2. Diagnostic information

Start

CAUTION

Unplug the power cord from the electrical outlet before you connect or disconnect any cable or electronic board or assembly for personal safety and to prevent damage to the printer. Disconnect any connections between the printer and PCs/peripherals.

Begin here to locate the service error code, user status message, user error message, symptom table, service checks, and diagnostic aids in this chapter to determine the corrective action necessary to repair a malfunctioning printer. They will lead you to solutions or service checks, including use of various tests.

- Does the POR stop? Check the **“POR (Power-On Reset) sequence” on page 2-2**
- Do you have a symptom, rather than an error message? Locate your symptom, and take the appropriate action:
  - **“Printer symptom table” on page 2-3**
  - **“Scan / fax / copy symptom table” on page 2-4**
- If you have an error message or user message, check the following:
  - **“Service error messages” on page 2-14**
  - **“User status and attendance messages” on page 2-6**
  - **“Paper Jam messages” on page 2-12**
  - **“Service checks” on page 2-32** for individual error messages
- Additional information can be found at the following locations:
  - “Operator panel and menus” on page 2-2
  - **“POR (Power-On Reset) sequence” on page 2-2**
  - **“Print engine theory” on page 3-46**

POR (Power-On Reset) sequence

The following is an example of the events that occur during the POR sequence for the base machine with no paper-handling options installed.

When you turn the printer on, it performs a Power-On Self Test. Check for correct POST functioning of the base printer by observing the following:

1. The LED turns on.
2. The main fan turns on.
3. The operator panel turns on.
4. A partial row of pixels appears.
5. The operator panel display clears.
6. Another row of pixels appears.
7. The operator panel display clears again.
8. The operator panel displays system information. For example:

*256MB 500Mhz

9. The fuser lamp turns on. The fuser takes longer to warm up from a cold start than a warm start.
10. The operator panel LED starts blinking.
    The following errors or messages may appear:
    - Close Door or Insert Cartridge display if the upper front cover is open or the print cartridge is missing.
    - Any cartridge errors, such as Defective Cartridge or Missing Cartridge.
11. Ready appears on the display.
12. The main drive motor turns on.
13. The EP drive assembly drives the developer shaft located in the toner cartridge.
14. The exit rollers turn.
15. The printer calibrates.

Symptom tables

Printer symptom table

Symptom	Action
Dead printer	Go to **“Dead printer service check” on page 2-37**.
Operator panel—one or more buttons do not work.	Go to **“One or more operator panel buttons fail” on page 2-44**.
Operator panel—display is blank. Printer sounds five beeps.	Go to **“Operator panel display blank, five beeps” on page 2-44**.
Operator panel—display is blank.	Go to **“Operator panel display blank, five beeps” on page 2-44**.
Operator panel continuously displays all diamonds and does not complete POST.	Go to **“Operator panel display blank, five beeps” on page 2-44**.
Pages print blank after replacing the controller board.	When replacing the controller board, verify the cable from the high-voltage power supply is seated properly. The cable may have come loose from the HVPS.
Tray linking does not work.	• Check that the same size and type of paper are in each tray. • Check the location of the paper guides. • The multipurpose feeder does not automatically sense the paper size. You must set the size from the Paper Size/Type menu. • Print a menu settings page, compare the settings for each tray, and adjust on the operator panel, if necessary.
Unexpected page breaks occur	• Increase the Print Timeout value on the operator panel (Settings–>General Settings–>Timeouts–>Print Timeout).
Multipurpose feeder has constant misfeeds or jams.	• Remove and flex the paper in the tray. Reload the paper, and try printing. • Turn the paper over inside the tray. • Make sure the feeder is properly installed. • Make sure the paper is loaded correctly in the tray. • Make sure the paper is not damaged. • Make sure the paper meets specifications. See **“Media input type specifications” on page 1-10**. • Make sure the paper guides are positioned correctly for the paper size loaded in the tray.
Page that jammed does not reprint after you clear the jam.	Jam Recovery may be set to Off. Change the setting to Auto or On on the operator panel (Settings–>General settings–>Print Recovery–>Jam Recovery.)
Pages print blank after replacing the controller board.	When replacing the controller board, verify the cable from the high-voltage power supply is seated properly. The cable may have come loose from the HVPS. **Warning:** A blank page that should have toner on it could be an indication that toner is applied to the ITU belt but not transferred. Therefore the toner goes into the ITU cleaner which cannot process massive amounts of toner. It is important to prevent extensive blank pages from being processed if they should have toner on them.
Unexpected page breaks occur	• Increase the Print Timeout value on the operator panel (Settings–>General Settings–>Timeouts–>Print Timeout.)

Scan / fax / copy symptom table

Symptom	Action
840.xx scanner error	Go to **“840.xx service check” on page 2-63**.
ADF won’t duplex (Duplex ADF only)	Go to **“ADF Duplex service check” on page 2-69**.
ADF skew	Go to **“ADF feed errors service check” on page 2-69**.
Multiple pages feed into ADF	
Documents wont feed into ADF	
Scanner makes buzzing noise on startup or during a scan.	Go to **“Flatbed home position service check” on page 2-66**.
Document feeds, but jams in ADF.	Go to **“ADF paper jam service check” on page 2-68**.
Black streaks on scans	Go to **“ADF streak service check” on page 2-67**.
Blank page	Go to **“Black or blank page copy service check” on page 2-65**.
Black page	
No dial tone	Go to **“Modem / fax card service check” on page 2-70**.
Machine dials a number but fails to make a connection with another fax machine.	The other fax machine may be turned off. Ask the fax recipient to check their machine.
Incoming fax has blank spaces or poor quality.	1. The sending fax machine may be faulty. 2. The sending fax machine may have a dirty document glass. 3. A noisy phone line can cause errors. 4. Check the MFP print quality by making a copy. 5. The print cartridge may be empty. Replace as necessary.
Invalid fax partition, or fax partition too small.	See **“Format Fax Storage” on page 3-34**.
Some words on an incoming fax are stretched.	The sending fax machine had a temporary jam.
Faxes fail to transmit.	Go to **“Fax transmission service check” on page 2-71**.
Fax reception fails.	Go to **“Fax reception service check” on page 2-73**.

Print quality symptom table

Symptom	Action
Background	Go to **“Print quality—background” on page 2-51**.
Blank page	Go to **“Print quality—blank page” on page 2-52**.
Blurred or fuzzy print	Go to **“Print quality—blurred or fuzzy print” on page 2-54**.
Half-color page	Go to **“Print quality—half-color page” on page 2-54**.
Horizontal banding	Go to **“Print quality—horizontal banding” on page 2-54**.
Horizontal line	Go to **“Print quality—horizontal line” on page 2-55**.
Insufficient fusing	Go to **“Print quality—insufficient fusing” on page 2-55**.
Missing image at edge	Go to **“Print quality—missing image at edge” on page 2-55**.
Mottle (2–5mm speckles)	Go to **“Print quality—mottle (2–5mm speckles)” on page 2-55**.
Narrow vertical line	Go to **“Print quality—narrow vertical line” on page 2-56**.
Random marks	Go to **“Print quality—random marks” on page 2-56**.
Residual image	Go to **“Print quality—residual image” on page 2-57**.
Solid color page	Go to **“Print quality—solid color page” on page 2-58**.
Vertical banding	Go to **“Print quality—vertical banding” on page 2-58**.
Color problems	Go to **“Color theory” on page 3-60**.

Error codes and messages

User status and attendance messages

User status and attendance messages

User primary message	Explanation
Calibrating	The printer is performing a color adjustment.
Close Door	Message clears when upper and lower doors are closed.
Insert Tray <*x*>	This message is displayed when the printer requests the user to insert tray *x* before it can continue printing the job. The printer needs to pick media from the missing tray or the trays below it. Tray *x*=Tray 1, Tray 2 **Note:** This message displays when refilling the trays during a job. Before filling tray a tray, take the printer offline by pressing **Stop** ⊠, and wait for pages to stop feeding into the output bin. The following actions can be taken: • Insert the requested tray. • Cancel the current job
No Analog Phone Line	An analog line is not detected as being plugged into the modem. If the device is in Analog mode, this has a source of Fax. If the device is in Fax Server mode, and the 'Enable analog receive' Fax Server setting is set to 'On', this has a source of Fax Receive. If the device is in Fax Server mode and the 'Enable analog receive' Fax Server setting is set to 'Off', then this IR is not generated.
Memory Full, cannot send faxes	After a start, there is no memory to do the fax job. Attempted fax is cancelled.
Insert Duplex Page in Tray <*x*>	Reload printed page in tray <*x*>. **Cancel Job** appears if the job can be cancelled.
Install Tray <*x*> or Cancel job	Printer detects that tray <x> is missing, where x is 1 or 2. This message appears if the job was begun, but the paper has not yet been retrieved. The tray is no longer detected. Replace the indicated tray.
Load <*source*> <*custom string*>	Printer does not detect media meeting the description <*custom string*> in <*source*>, where <*source*> is Tray 1, Tray 2, Multi-Page Feeder (MP feeder), or Envelope Feeder. • Load the input source with the correct type and size media. • Cancel the current job.
Load <*source*> <*custom type*>	Printer does not detect media meeting the description <*custom type*> in <*source*>, where <*source*> is Tray 1 or Tray 2. • Load the input source with the correct type and size media. • Cancel the current job.
Load <*source*> <*size*>	Printer does not detect media meeting the size requested in the source indicated. • Load the input source with the correct type and size media. • Cancel the current job.
Load <*source*> <*type*> <*size*>	Printer does not detect media meeting the size or type requested in the source indicated. • Load the input source with the correct type and size media. • Cancel the current job.
Load Manual <*custom type*>	Printer does not detect media meeting the description <*custom type*> in the single sheet feeder (manual feeder). The following actions can be taken: • Load paper, and the job continues. • press **Select** (☑), and choose an alternate source for media. • Cancel the current job.

User status and attendance messages (continued)

User primary message	Explanation
Load Manual <*custom string*>	Printer does not detect media meeting the description <*custom string*> in the single sheet feeder (manual feeder). The following actions can be taken: • Load paper and the job continues. • press **Select** (☑), and choose an alternate source for media. • Cancel the current job.
Load Manual <*size*>	Printer does not detect media meeting the description <*size*> in the single sheet feeder (manual feeder). The following actions can be taken: • Load paper and the job continues. • press **Select** (☑), and choose an alternate source for media. • Cancel the current job.
Load Manual <*type*> <*size*>	Printer does not detect media meeting the description <*type*> and <*size*> in the single sheet feeder (manual feeder). The following actions can be taken: • Load paper and the job continues. • press **Select** (☑), and choose an alternate source for media. • Cancel the current job.
PJL ST Message	Try one or more of the following: • press **Select** (☑) to clear the message, and continue printing. • Wait for the message to clear.
Remove Paper ADF	This posts when there is paper detected in the ADF upon POR or when the cover is closed (or any other situation that re-inits the scanner). Message clears when paper is removed.
Remove Paper Standard Bin	The standard output bin is full or nearly full. Remove the media from the bin.
Remove Packaging Material	Packaging material is detected by the printer. Remove the packaging material and press **Continue**.
Unplug and Change Mode	Camera is not in a proper mode to use the PictBridge feature. Unplug the camera cable to the printer, and change the camera mode.
Replace Black Imaging Unit	Replace the Black Imaging Unit.
Replace Color Imaging Unit	Replace the Color Imaging Unit.
Replace <color> Cartridge	Replace the toner cartridge of the indicated color. The printer continues after the toner door is closed.
Unsupported Mode	Camera is not in a proper mode to use the Pict Bridge feature. Unplug the camera cable to the printer and change the camera mode.
Unsupported USB Device, Please Remove	Remove the unrecognized device from the USB port on the front of the printer.
Unsupported USB Hub, please remove	Remove the unrecognized USB hub/device from the USB port on the front of the printer.
30.xx <*color*> Toner Cart Missing	The specified toner cartridge is missing. Re-install the missing toner cartridge to clear the message, and then continue printing. If the message recurs remove and re-install the cartridge. Listen for the *click* to ensure the cartridge is installed properly. Close the front cover.

User status and attendance messages (continued)

User primary message	Explanation
31.xx Defective <*color*> cartridge	The specified cartridge is defective. Try one of the following: • Open and close the top cover. • Remove and re-install the cartridge(s). Listen for the *click* to ensure the cartridge is installed properly. • Turn the printer power off and turn the printer power on. If the message persists, replace the cartridge with a new one, and close the front cover.
31.xx Defective Imaging Kit.	Defective imaging kit. Try one or more of the following: • Open and close the top cover. • Remove and re-install the cartridge(s). Listen for the *click* to ensure the cartridge is installed properly. • Turn the printer power off, and then turn the printer power on. If the message persists, determine if the imaging kit counter is greater than 15,000 cycles. It it is, then replace the entire kit. See **"Imaging unit (IU) removal" on page 4-28**. If the counter is below 250,000 cycles, replace only the photoconductors.
32.xx Replace unsupported <color> Cartridge	Remove the specified cartridge, replace with a supported cartridge, and close the front cover.
34 Short Paper	• press **Select** (✓) to clear the message and continue printing. The printer does not automatically reprint the page that prompted the message. • Check tray length and width guides to ensure paper is properly fitted in the tray. • Make sure the print job is requesting the correct size of paper. • Adjust the Paper Size setting for the size paper you are using. If MP Feeder Size is set to Universal, make sure the paper is large enough for the formatted data. • Cancel the current job.
35 RES Save Off Deficient Memory	This message displays when the printer lacks sufficient memory to enable Resource Save. This message usually indicates the user has allocated too much memory for one or more of the printer link buffers; however, modification of other printer settings which affect the amount of available memory may also create this condition. If restoration of Resource Save is required after this message is received, the customer should install additional memory or set each link buffer to Auto. Once all link buffers are returned to Auto, you should exit the menu to activate the link buffer changes. Once the printer returns to the Ready state, you can enable Resource Save and go back and modify the link buffers again. Note the reduction of available memory to the link buffers when Resource Save has been enabled, and compare it to the memory available when Resource Save is disabled. • press **Select** (✓) to disable Resource Save and continue printing. To enable Resource Save after you get this message: - Make sure the link buffers are set to Auto, then exit the menus to activate the link buffer changes. - When **Ready** is displayed, enable Resource Save. • Install additional memory.
37 Insufficient Collation Area	This message is displayed when the printer memory used to store pages is too full to collate the print job. The following actions can be taken: • press **Select** (✓) to print the portion of the job already stored, and begin collating the rest of the job. • press **Menus** (⊶) to access the Busy/Waiting Menu. The following functions are available. - Cancel Job **Note:** Menu Lockout does NOT prevent access to the Busy/Waiting Menu.

User status and attendance messages (continued)

User primary message	Explanation
37 Insufficient memory for flash defragment operation	This message is displayed when insufficient printer memory is available to perform Flash Memory Defragment operation. This message appears prior to the actual start of the defragment operation. press **Select** (☑) to stop the defragment operation. To perform the defragment operation, you can: • Delete fonts, macros, and other data in RAM. • Install additional printer memory. • press **Menus** (⊶) to access the Busy/Waiting Menu. The following functions are available using the Busy/Waiting Menu: - Cancel Job - Reset Printer **Note:** Menu Lockout does NOT prevent access to the Busy/Waiting Menu.
38 Memory Full	This message is displayed when the printer is processing an incoming job and there is not enough memory available to continue processing the job. The following actions can be taken: • Determine how to make more memory available to your print job by: - Deleting fonts, macros and other data in RAM. - Simplify your print job. - Install additional memory • press **Select** (☑) to clear the message and continue printing. The job may not print correctly. • press **Menus** (⊶) to access the Busy/Waiting Menu. The following functions may be available: - Cancel Job
39 Complex Page	This message is displayed when a page is too complex to print. The following actions can be taken: • press **Select** (☑ to clear the message and continue printing. The job may not print correctly. • Simplify the print job. • press **Menus** (⊶) to access the Busy/Waiting Menu. The following functions may be available: - Cancel Job - Reset Printer **Note:** Menu Lockout does NOT prevent access to the Busy/Waiting Menu.
50 PPDS Font Error	This error only occurs when a printer is formatting PPDS print data. The PPDS interpreter has detected a font error. When a specific font, which is not installed, is requested based on a PPDS mode Set Font Global command, a Select Code Page command, or a Comprehensive Font Selection command, and the printer Best Fit setting is off. If Best Fit is on, the printer performs a best fit search to find a similar font, and this error does not occur. This error also displays when the printer receives invalid PPDS download font data. The following actions can be taken while this message is displayed: • press **Select** (☑ to clear the message and continue printing. The job may not print correctly. • press **Menus** (⊶ to access the Busy/Waiting Menu. The following functions may be available: - Cancel Job
51 Defective Flash Detected	press **Select** (☑ to clear the message and continue printing. You must install different flash memory before you can download any resources to flash.
52 Flash Full	• press **Select** (☑ to clear the message and continue printing. • Delete fonts, macros, and other data stored on the flash memory. • Install a larger capacity flash memory card.

User status and attendance messages (continued)

User primary message	Explanation
53 Unformatted Flash	press **Select** (✓) to clear the message and continue printing. You must format the flash memory before you can store any resources on it. If the error message remains, the flash memory may be defective and require replacing.
54 Standard Network Software Error	This message is displayed when the RIP software detects that a network port is installed but cannot establish communications with it. • press **Select** (✓) to clear the message and continue printing. The job may not print correctly. • Program new firmware for the network interface. • Turn the printer power off and then back on to reset the printer.
54 Network <*x*> Software Error	The printer disables all communications to the associated network interface. No data may be received or sent from or to the associated interface. The user can program new firmware in the network using the parallel port after this message clears. • press **Select** (✓) to clear the message and continue printing. The job may not print correctly. • Program new firmware for the network interface. • Turn the printer power off and then back on to reset the printer.
56 Standard USB Port Disabled	This message may appear when data is sent to the printer across a USB port, but the port is disabled. **Note**: Once the error is displayed the first time, reporting of further errors is suppressed until the printer is reset or menus are entered. The following actions can be taken: • press **Select** (✓) to clear the message. Any data received on the USB port is discarded. • press **Menus** (⊶) to access the Busy/Waiting Menu. The following functions may be available: - Turn the printer power off and then back on to reset the printer. - Reset Active Bin - Check Supply Levels Make sure the USB Buffer menu item is not set to Disabled. (press **Menus** ⊶ to access the Administrative Menus, select **Network/Ports**, **USB Menu**, and **USB Buffer**.)
58 Too many Flash Options Installed	1. Turn off and unplug the printer. 2. Remove the excess flash memory. 3. Plug in the printer, and turn it on.
58 Too Many Trays Installed	1. Turn off and unplug the printer. 2. Remove the additional trays. 3. Plug in the printer, and turn it on.
59 Incompatible Tray <*x*>	1. Turn off and unplug the printer. 2. Remove the specified incompatible tray. 3. Plug in the printer, and turn it on.
82 Waste Toner Nearly Full	Try one or more of the following: • Replace the waste toner bottle, and then press **Select** (✓) to clear the message and continue printing. See Go to **"Waste toner bottle" on page 4-49**. • press **Select** (✓) to clear the message and continue printing. Order the waste toner bottle so it will be available when the replacement message is displayed. Once the replacement message is displayed, the printer will not continue until the waste toner is replaced.
82 Waste Toner Missing	Waste toner box must be present. Install the waste toner bottle. • Replace the specified toner cartridge.
88 <*color*> Toner Low	The term <*color*> includes black, cyan, magenta, and yellow. • Replace the specified toner cartridge. • press **Select** (✓) to clear the message and continue printing.

User status and attendance messages (continued)

User primary message	Explanation
88 <*color*> Cartridge Early Warning	The term <*color*> includes black, cyan, magenta, and yellow. • Replace the toner cartridge and press **Select** (✓) to clear the message and continue printing.
88 Replace <*color*> Cartridge	The term <*color*> includes black, cyan, magenta, and yellow. • Replace the toner cartridge and press **Select** (✓) to clear the message and continue printing.
Scanner ADF cover open	The cover to the ADF is open. • Close the ADF cover. If this doesn't remedy the problem, Go to **"ADF cover open service check" on page 2-67**".
Scan job too long	The scan job exceeds the maximum number of pages • Break the scan job into multiple small jobs. • Cancel the scan job.
Paper cleared	Paper is cleared from ADF • Cancel job • Restart job - This can only be performed if job recovery is enabled and the job can be restarted. A new job with the same parameters is started.

Paper Jam messages

Paper jam messages (2xx)

Error code	Description	Action
2xx paper jams		
200.*xx* Paper Jam Check <*area*>	A single page of media jam at the input sensor.	Remove the tray1 unit, open the front door, and remove the print cartridge to access the jam area. Remove the jammed page. See **"200 paper jams" on page 3-41**.
200.*xx* Paper Jam <*x*> Pages Jammed	Multiple pages of media are jammed at the input sensor.	Open the front door and remove the print cartridge to access the jam area. Remove all the jammed pages. See **"200 paper jams" on page 3-41**.
201.*xx* Paper Jam Check <*area*>	A single page of media is jammed between the input and exit sensors.	Open the front door and remove the print cartridge to access the jam area. Remove the jammed page. See **"201 paper jam" on page 3-41**.
201.*xx* Paper Jam <*x*> Pages Jammed	Multiple pages of media are jammed between the input and exit sensors.	Open the front door and remove the print cartridge to access the jam area. Remove all the jammed pages. See **"201 paper jam" on page 3-41**.
202.*xx* Paper Jam Check <*area*>	A single page of media is jammed at the exit sensors.	Open the printer rear door to access the jam area. Remove the jammed page. See **"202 paper jam" on page 3-42**.
202.*xx* Paper Jam <*x*> Pages Jammed	Multiple pages of media are jammed at the exit sensor	Open the printer rear door to access the jam area. Remove all the jammed pages. See **"202 paper jam" on page 3-42**.
230.xx Paper Jam Check <*area*>	A single page of media is jammed at the inner door.	Remove the jammed page. See **"230 paper jam" on page 3-43**.
230.xx Paper Jam <*x*> Pages Jammed	Multiple pages of media are jammed at the inner door.	Remove all the jammed pages. See **"230 paper jam" on page 3-43**.
235 Paper Jam Check Duplex	Paper jam in the duplex area.	Remove all pages. See Go to **"235 paper jam" on page 3-43**.
24x.*xx* Paper Jam Check <*area*>	A single or multiple page media jam in the 650-sheet Duo Drawer (tray 2).	See **"24x paper jam" on page 3-43**.
24x.*xx* Paper Jam <*x*> Pages Jammed	Multiple pages of media are jammed in the 650-sheet Duo Drawer (tray 2).	See **"24x paper jam" on page 3-43**.
250.*xx* Paper Jam Check Manual Feeder	A single page of media is jammed in the multipurpose feeder.	Open tray 2 to access the jam area. Remove the jammed page. See **"250 paper jam" on page 3-43**.
250.*xx* Paper Jam <*x*> Pages Jammed	Multiple pages of media are jammed in the multipurpose feeder.	Open tray 2 to access the jam area. Remove all the jammed pages. See **"250 paper jam" on page 3-43**.
290.02 Scanner ADF Feed Jam	The scanner ADF has failed to feed a page to the ADF interval sensor.	Remove the sheet of paper rom the ADF. Retry the job. If the error recurs, Go to **"ADF paper jam service check" on page 2-68**.
290.10 Scanner Static Jam	Scanner ADF detects paper at the first scanner sensor while the ADF is in an idle state.	Remove all paper from the ADF. Retry the job. If the error recurs, Go to **"ADF paper jam service check" on page 2-68**.

Paper jam messages (2xx) (continued)

Error code	Description	Action
290.20 Scanner Static Jam-Paper Present	This message occurs when paper is detected in the ADF during a POR, or when the MFP is starting up.	Remove original documents from the ADF.
290.30-Scanner Static Jam-Paper Stop	This message displays when paper is inserted past the paper stop on the ADF.	Remove original documents from the ADF.
291.00 Scanner Jam, remove all originals from the scanner	Scanner ADF detects paper at the second scanner sensor while the ADF is in an idle state.	
291.01 Scanner Jam, remove all originals from the scanner	This message is posted if a jam is detected at the first scanner sensor.	
292 Scanner jam, remove all originals from the scanner	This message appears if the ADF cover is open while paper is fed through the ADF.	Remove the paper from the ADF, and close the ADF cover. If the error recurs, Go to **“ADF cover open service check” on page 2-67**.
293 Replace all originals if restarting job	No paper sensed in the ADF.	Ensure that the paper present actuator is in the correct position. See **“ADF paper jam service check” on page 2-68**.
293.02 Flatbed cover open	The MFP senses that the flatbed cover is open.	Close the flatbed cover. See **“ADF cover open service check” on page 2-67**.
294.04 Scanner jam, remove all originals from the scanner	Jam at the ADF exit sensor.	Remove all paper from the ADF. If the error recurs, **“ADF paper jam service check” on page 2-68**.
294.05 Scanner jam, remove all originals from the scanner	A jam is detected at the ADF exit sensor.	

Service error messages

Service error messages (1XX, 8XX and 9xx)

Error code	Description	Action
106.*xx* Service Yellow Printhead	Yellow printhead error.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.01 Service Yellow Printhead	The yellow printhead lost HSYNC.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.02 Service Yellow Printhead	The yellow printhead failed to complete servo.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.03 Service Yellow Printhead	The yellow printhead mirror motors failed to achieve lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.04 Service Yellow Printhead	The yellow printhead mirror motors lost PLL motor lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.05 Service Yellow Printhead	Failure reading NVRAM from printhead.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.06 Service Yellow Printhead	The yellow printhead thermistor is open.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.07 Service Yellow Printhead	The yellow printhead thermistor is shorted to ground.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
106.08 Service Yellow Printhead	The yellow laser showed bad in EMS testing.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
107.*xx* Cyan Printhead Error	Cyan printhead error.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
107.01 Service Cyan Printhead	The cyan printhead lost HSYNC.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
107.02 Service Cyan Printhead	The cyan printhead failed to complete servo.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
107.03 Service Cyan Printhead	The cyan printhead mirror motors failed to achieve lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**
107.04 Service Cyan Printhead	The cyan printhead mirror motors lost PLL motor lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
107.05 Service Cyan Printhead	Failure reading NVRAM from the cyan printhead.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
107.06 Service Cyan Printhead	The cyan printhead thermistor is open.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
107.07 Service Cyan Printhead	The cyan printhead thermistor is shorted to ground.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
107.08 Service Cyan Printhead	The cyan laser showed bad in EMS testing.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.*xx* Service Magenta Printhead	Magenta printhead error.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.01 Service Magenta Printhead	The magenta printhead lost HSYNC.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.02 Service Magenta Printhead	The magenta printhead failed to complete servo.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.03 Service Magenta Printhead	The magenta printhead mirror motors failed to achieve lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.04 Service Magenta Printhead	The magenta printhead mirror motors lost PLL motor lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.05 Service Magenta Printhead	Failure reading NVRAM from the magenta printhead.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.06 Service Magenta Printhead	The magenta printhead thermistor is open.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.07 Service Magenta Printhead	The magenta printhead thermistor is shorted to ground.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
108.08 Service Magenta Printhead	The magenta laser showed bad in EMS testing.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
109.*xx* Service Black Printhead	Black printhead error.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
109.01 Service Black Printhead	The black printhead lost HSYNC.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
109.02 Service Black Printhead	The black printhead failed to complete servo.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**
109.03 Service Black Printhead	The black printhead mirror motors failed to achieve lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**
109.04 Service Black Printhead	The black printhead mirror motors lost PLL motor lock.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
109.05 Service Black Printhead	Failure reading NVRAM from printhead.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
109.06 Service Black Printhead	The black printhead thermistor is open.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
109.07 Service Black Printhead	The black printhead thermistor is shorted to ground.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
109.08 Service Black Printhead	The black laser showed bad in EMS testing.	Perform a POR. If the problem persists, go to **"Printhead service check" on page 2-59**.
122.*xx* Service Fuser Error	Fuser error	Go to **"Fuser service check" on page 2-41**.
122.01 Service Fuser Error	EWC error—Attempting to print with estimated power at or below minimum power.	Go to **"Fuser service check" on page 2-41**.
122.02 Service Fuser Error	Fuser over temperature.	Go to **"Fuser service check" on page 2-41**.
122.03 Service Fuser Error	Fuser open thermistor check failed.	Go to **"Fuser service check" on page 2-41**.
122.04 Service Fuser Error	EWC Error—Did not reach EWC start temperature in time.	Go to **"Fuser service check" on page 2-41**.
122.05 Service Fuser Error	EWC Error—Did not change temperature within expected time.	Go to **"Fuser service check" on page 2-41**.
122.06 Service Fuser Error	EWC Error—Did not reach EWC stop temperature in time.	Go to **"Fuser service check" on page 2-41**.
122.07 Service Fuser Error	Timed out waiting for home sensor event.	Go to **"Fuser service check" on page 2-41**.
122.08 Service Fuser Error	Wrong lamp bit is set in NVRAM.	Go to **"Fuser service check" on page 2-41**.
122.09 Service Fuser Error	Fuser zero crossings out of range. Zero crossing detected.	Go to **"Fuser service check" on page 2-41**.
122.10 Service Fuser Error	Fuser failed to warm up.	Go to **"Fuser service check" on page 2-41**.
122.11 Service Fuser Error	Fuser under temperature error while in standby.	Go to **"Fuser service check" on page 2-41**.
122.12 Service Fuser Error	Fuser under temperature error while printing.	Go to **"Fuser service check" on page 2-41**.
122.13 Service Fuser Error	Fuser open thermistor check failed for second thermistor.	Go to **"Fuser service check" on page 2-41**.
122.14 Service Fuser Error	Fuser shorted thermistor check failed for hot roll thermistor.	Go to **"Fuser service check" on page 2-41**.
122.15 Service Fuser Error	Fuser started thermistor check failed for second thermistor	Go to **"Fuser service check" on page 2-41**.

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
122.16 Service Fuser Error	EWC Error—Estimated power is at or above maximum power.	Go to **"Fuser service check" on page 2-41**.
141.*xx* Service Staging Motor	Staging motor error.	Go to **"Autocompensator mechanism service check" on page 2-32**
141.01 Service Staging Motor	Staging motor has exceeded the ramp up table.	Go to **"Autocompensator mechanism service check" on page 2-32**
141.02 Service Staging Motor	Staging motor has exceeded number of encoders at min PWM.	Go to **"Autocompensator mechanism service check" on page 2-32**
141.03 Service Staging Motor	Staging motor has exceeded number of encoders at max PWM.	Go to **"Autocompensator mechanism service check" on page 2-32**
141.04 Service Staging Motor	Motor encoder count did not change between interrupts.	Go to **"Autocompensator mechanism service check" on page 2-32**
141.05 Service Staging Motor	Staging motor has encountered a stall timeout.	Go to **"Autocompensator mechanism service check" on page 2-32**
150.*xx* Service Black/ITU cartridge Motor	Black/ITU Cartridge Motor	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
150.01 Service Black/ITU cartridge Motor	Failed to achieve lock for motor within allotted time.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
150.02 Service Black/ITU cartridge Motor	Timeout waiting for SAP BLDC motor to reach valid FG speed.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
150.03 Service Black/ITU cartridge Motor	Timeout waiting for MP_NUM_INITIAL_SAP_HALLS.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
150.04 Service Black/ITU cartridge Motor	Timeout waiting for SAP BLDC motor FG.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
150.05 Service Black/ITU cartridge Motor	Lost lock for motor.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
150.06 Service Black/ITU cartridge Motor	Excessive SAP BLDC PWM.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
150.07 Service Black/ITU cartridge Motor	Motor stalled in time-based commutation.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
152.*xx* Service Cyan Cartridge Motor		Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
152.01 Service Cyan Cartridge Motor	Failed to achieve lock for motor within allotted time.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
152.02 Service Cyan Cartridge Motor	Timeout waiting for SAP BLDC motor to reach valid FG speed.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
152.03 Service Cyan Cartridge Motor	Timeout waiting for MP_NUM_INITIAL_SAP_HALLS.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
152.04 Service Cyan Cartridge Motor	Timeout waiting for SAP BLDC motor FG.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
152.05 Service Cyan Cartridge Motor	Lost lock for motor.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
152.06 Service Cyan Cartridge Motor	Excessive SAP BLDC PWM.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
152.07 Service Cyan Cartridge Motor	Motor stalled in time-based commutation.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.*xx* Service Magenta Cartridge Motor		Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.01 Service Magenta Cartridge Motor	Failed to achieve lock for motor within allotted time.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.02 Service Magenta Cartridge Motor	Timeout waiting for SAP BLDC motor to reach valid FG speed.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.03 Service Magenta Cartridge Motor	Timeout waiting for MP_NUM_INITIAL_SAP_HALLS.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.04 Service Magenta Cartridge Motor	Timeout waiting for SAP BLDC motor FG.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.05 Service Magenta Cartridge Motor	Lost lock for motor.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.06 Service Magenta Cartridge Motor	Excessive SAP BLDC PWM.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
153.07 Service Magenta Cartridge Motor	Motor stalled in time-based commutation.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
154.*xx* Service Yellow Cartridge Motor		Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
154.01 Service Yellow Cartridge Motor	Failed to achieve lock for motor within allotted time.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
154.02 Service Yellow Cartridge Motor	Timeout waiting for SAP BLDC motor to reach valid FG speed.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
154.03 Service Yellow Cartridge Motor	Timeout waiting for MP_NUM_INITIAL_SAP_HALLS.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
154.04 Service Yellow Cartridge Motor	Timeout waiting for SAP BLDC motor FG.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
154.05 Service Yellow Cartridge Motor	Lost lock for motor.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
154.06 Service Yellow Cartridge Motor	Excessive SAP BLDC PWM.	Go to **"Main drive gear assembly (EP drive) service check" on page 2-43**.
154.07 Service Yellow Cartridge Motor	Motor stalled in time-based commutation.	
8xx service errors		
840.01 Scanner disabled	The scanner is disabled and can't be used.	Enter the configuration menu, and re-enable the scanner module. Go to **"840.xx service check" on page 2-63**
840.02 Scanner auto disabled	The scanner is disabled and can't be used.	This message is posted when the MFP PORs. Enter the configuration menu, and re-enable the scanner module. Go to **"840.xx service check" on page 2-63**
841	Image Pipeline	Image pipeline ASIC. Go to **"CCD service check" on page 2-65**. Also,Go to **"Flatbed home position service check" on page 2-66**.
842	Scanner Failure	Communication failure. Go to **"CCD service check" on page 2-65**
843	Scanner Failure	Carriage mechanical failure.Go to **"Flatbed motor service check" on page 2-65**
843.01	Scanner Failure	ADF mechanical failure. Go to **"ADF paper jam service check" on page 2-68**
844.yy	Scanner Failure	Lamp failure. Go to **"CCD service check" on page 2-65**
844	Front scan module output level error	Go to **"CCD service check" on page 2-65**
844.01	Rear scan module output level error	
844.02	Front scan module lamp level too low	Front Mono channel, Front Color channels, Front Red channel, Front Green channel, and/or Front Blue channel is detected to have low lamp level. Go to **"CCD service check" on page 2-65**
844.03	Rear scan module lamp level too low	Rear Mono channel, Rear Color channels, Rear Red channel, Rear Green channel, and/or Rear Blue channel is detected to have low lamp level. Go to **"CCD service check" on page 2-65**
845.yy	Scanner Failure	CCD failure Go to **"CCD service check" on page 2-65**

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
845	Front scan module cable failure or SCC card failure	CCD channel failure. Check each channel(mono, R, G, B) for identical values indicating bad cable and/or SCC card. Excessive noise test for the dark data indicating some sort of CCD or analog electronics issue on that channel or channels. Go to **"CCD service check" on page 2-65**
845.01	Rear scan module cable failure or SCC card failure	CCD channel failure. Check each channel(mono, R, G, B) for identical values indicating bad cable and/or SCC card. Excessive noise test for the dark data indicating some sort of CCD or analog electronics issue on that channel or channels. Go to **"CCD service check" on page 2-65**
845.02	Cable / SCC Failure	Front scan module connector or cable failure Go to **"CCD service check" on page 2-65**
845.03	Cable / SCC Failure	Rear scan module connector or cable failure Go to **"CCD service check" on page 2-65**
845.04	Cable Failure	The connector cable is defective. Go to **"CCD service check" on page 2-65**.
846	Front calibration strip unusable	Go to **"CCD service check" on page 2-65**
846.01	Rear calibration strip unusable	
846.02	Front calibration strip too far left	The font calibration strip is placed to high or to low. Go to **"CCD service check" on page 2-65**
846.03	Front calibration strip too far right	Go to **"CCD service check" on page 2-65**.
846.04	Front calibration strip has excessive skew	
846.05	Front calibration strip has excessive bow	
846.06	Front calibration strip has excessive dark area	Front excessive variability for Mono, Red, Green, or Blue. Go to **"CCD service check" on page 2-65**
846.07	Front magnification exceeds limits	Rear excessive variability for Mono, Red, Green, or Blue. Go to **"CCD service check" on page 2-65**
847	Modem Failure	The Configuration ID bit that describes the device's modem doesn't match the actual modem installed in the device.

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
847.01	Fax Storage	The amount of flash storage available on the device is too small. Note: The NAND Flash partition can shrink as bit failures cause blocks to be invalidated. Go to **"Format Fax Storage" on page 3-34**. If the issue is not fixed, replace the controller board. Go to **"Controller board removal" on page 4-16**.
847.02	Fax Storage	The devices' flash partition is invalid or unavailable. Go to **"Format Fax Storage" on page 3-34**. If the issue is not fixed, replace the controller board. Go to **"Controller board removal" on page 4-16**.
848	Modem/Config ID Mismatch	A device doesn't have a modem installed, even though its Configuration ID indicates that a modem should be present.
848.01	Modem/Config ID Mismatch	A device has a modem installed, but its Configuration ID indicates that a modem shouldn't be present.
849	HD/Config ID Mismatch	A device doesn't have a hard drive installed, even though its Configuration ID indicates that a hard drive should be present.
849.01	HD/Config ID Mismatch	A device has a hard drive installed, but its Configuration ID indicates that a hard drive shouldn't be present.
9xx service errors		
900.*xx* Service RIP Software	Unrecoverable RIP software error/ illegal trap.	Go to **"90x.xx error" on page 2-32**.
902.*xx* Service Engine Software	A general engine software error.	Go to **"90x.xx error" on page 2-32**
903.*xx* Service Engine Software	A paperport link driver error.	Go to **"90x.xx error" on page 2-32**
904.*xx* Service Engine Software	An interface violation by RIP.	Go to **"90x.xx error" on page 2-32**
905.*xx* Service Engine Software	An interface violation by paperport device.	Go to **"90x.xx error" on page 2-32**
906.*xx* Service Engine Software	A RIP interface driver error.	Go to **"90x.xx error" on page 2-32**
910.*xx* Service DC Pick Motor	The DC pick motor stalled.	Go to **"Autocompensator mechanism service check" on page 2-35**.
911.*xx* Service DC Pick Motor	The DC pick motor has excessive PWM.	Go to **"Autocompensator mechanism service check" on page 2-35**
912.*xx* Service DC Pick Motor	The DC pick motor is below speed.	Go to **"Autocompensator mechanism service check" on page 2-35**
913.*xx* Service DC Pick Motor	The DC pick motor over speed.	Go to **"Autocompensator mechanism service check" on page 2-35**

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
914.*xx* Service PC Pick Motor	The DC pick has no encoder feedback.	Go to **"Autocompensator mechanism service check" on page 2-35**
917.*xx* Service Transfer Roll	There is a problem with the transfer roll.	Go to Go to **"Transfer roll service check" on page 2-61**.
920.*xx* Service Fuser Error	The fuser is below temperature when printing.	Go to **"920.xx–923.xx—Fuser temperature incorrect" on page 2-32**.
921.*xx* Service Fuser Error	The fuser is below standby temperature when idle.	Go to **"920.xx–923.xx—Fuser temperature incorrect" on page 2-32**
922.*xx* Service Fuser Error	The fuser failed to reach standby temperature.	Go to **"920.xx–923.xx—Fuser temperature incorrect" on page 2-32**
923.*xx* Service Fuser Error	The fuser is too hot during printing or when the printer is idle.	Go to **"920.xx–923.xx—Fuser temperature incorrect" on page 2-32**
924.*xx* Service Fuser Error	An open circuit in the connection to the fuser thermistor has been detected.	Go to **"920.xx–923.xx—Fuser temperature incorrect" on page 2-32**
925.*xx* Service Fuser Error	Wrong fuser lamp is installed. The fuser type stored in the Cartridge ID doesn't match the actual fuser installed in the printer.	Go to **"920.xx–923.xx—Fuser temperature incorrect" on page 2-32**
927.*xx* Service Fan Stalled	The printer fan is stalled.	
929.*xx* Service Toner Sensor	The printer doesn't register a transition on the toner sensor for a set period of time. Either the printer's toner sensor is faulty or its print cartridge is defective.	The Servicer should follow these steps to resolve this problem: 1. Use the base sensor test in Diagnostics mode to inspect the toner sensor's operation. 2. If the toner sensor is operating correctly, then the problem is the print cartridge.
930.*xx* Service Printhead Error	The wrong printhead is installed.	Go to **"930.xx–935.xx—Printhead errors service check" on page 2-34**.
931.*xx* Service Printhead Error	There is no first HSYNC.	Go to **"930.xx–935.xx—Printhead errors service check" on page 2-34**
932.*xx* Service Printhead Error	Lost HSYNCs.	Go to **"930.xx–935.xx—Printhead errors service check" on page 2-34**
933.*xx* Service Printhead Error	Mirror motor is locked. No HSYNC received.	Go to **"930.xx–935.xx—Printhead errors service check" on page 2-34**
935.*xx* Service Printhead Error	Mirror motor is unable to reach operating speed.	Go to **"930.xx–935.xx—Printhead errors service check" on page 2-34**
936.*xx* Service Transport Motor	The transport motor had an initial lock failure.	Go to **"936.xx, 937.xx—Transport motor service check" on page 2-34**.
937.*xx* Service Transport Motor	The transport motor lost lock.	Go to **"936.xx, 937.xx—Transport motor service check" on page 2-34**

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
940.*xx* Service LV Power Supply	A RIP to engine communication failure. The zero crossing signal used for fuser control in the low-voltage (LV) power supply has failed, or the wrong low-voltage power supply has been installed.	
940.00 Service Cyan TMC Sensor	The cyan cartridge toner meter cycle (TMC) switch error.	
940.00 Service Magenta TMC Sensor	The magenta cartridge toner meter cycle (TMC) switch error.	
940.00 Service Yellow TMC Sensor	The yellow cartridge toner meter cycle (TMC) switch error.	
940.00 Service Black TMC Sensor	The black cartridge toner meter cycle (TMC) switch error.	
948.*xx* Service Engine Card	The pel clock check failed.	If this error message persists, replace the controller board. See **"Controller board removal" on page 4-16**.
949.*xx* Service Engine Card	Delay line calibration failure	If this error message persists, replace the controller board. See **"Controller board removal" on page 4-16**.
950.*xx* Service NVRAM Failure	There is a mismatch between controller EEPROM and mirror. • 950.00 through 950.29 codes: mismatch between controller and mirror • 950.30 through 950.60 codes: mismatch between secure and controller	Go to **"950.xx EPROM mismatch failure service check" on page 2-35**.
951.*xx* Service NVRAM Failure	Mismatch between controller EEPROM and mirror. • 951.00 through 951.29 codes: mismatch between controller and mirror • 951.30 through 951.60: mismatch between secure and controller	
952.*xx* Service NVRAM Failure	A recoverable MVRAM Cyclic Redundancy Check (CRC) error occurred. "*n*" is the offset at which the error occurred.	Performing a POR will clear this error.
953.*xx* Service NVRAM Failure	NVRAM chip failure with mirror.	
954.*xx* Service NVRAM Failure	The NVRAM chip failure with controller part.	

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
955.*xx* Service Code CRC <*loc*>	The Code ROM or NAND flash failed the Cyclic Redundancy Check (CRC) check or the NAND experienced an uncorrectible multi-bit failure. "<*loc*>" indicates the source of the failure and has one of the following values: • **CRC Failure**: The source is a failing package indicated by P*n* where "*n*" is the package number. This error could occur on a controller with ROM or NAND flash and could occur as a result of the CRC check done when the machine is powered on. The range of package numbers is from 0 to 15. • **Error Correction Code (ECC) Failure**: The source is a failing page indicated by B*n* where "*n*" is the page number. This error occurs only if a multi-bit failure is detected during the ECC execution. Single bit failures will be corrected automatically and will not result in a service error. The range of page numbers is from 0 to 1023.	
956.00 Service System Board	Controller board failure. Processor failure.	Replace conrtroller board. See**“Controller board removal” on page 4-16**.
956.01 Service System Board	Processor over temperature.	
957.*xx* Service System Board	Controller board failure. ASIC failure.	
958.*xx* Service NAND Failure	Printer has performed more than 100 “shift and reflash” operations as a result of ECC bit corrections.	
959.01 Service Invalid Firmware	Controller verification failure of pensive boot code	Update firmware or replace controller board. See**“Controller board removal” on page 4-16**.
959.02 Service Invalid Firmware	Failure to authenticate Signature Verification Code.	Update firmware or replace controller board. See**“Controller board removal” on page 4-16**.
959.03 Service Invalid Firmware	Signature verification Code failure to authenticate a code partition.	Update firmware or replace controller board. See**“Controller board removal” on page 4-16**.
959.04 Service Invalid Firmware	Jump to unverified address.	Update firmware or replace controller board. See**“Controller board removal” on page 4-16**.
959.05 Service Invalid Firmware	Unknown Boot Failure.	Update firmware or replace controller board. See**“Controller board removal” on page 4-16**.
959.20 Service System Board	Hardware control hardware failure.	Replace controller board. See**“Controller board removal” on page 4-16**.
959.21 Service System Board	Hardware control did not respond to command request.	Replace controller board.

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
959.22 Service System Board	Challenge Secret Failure.	ASIC/SP mismatch Replace controller board. See**"Controller board removal" on page 4-16**.
959.23 Service System Board	Hardware control self test failure during initialization.	Replace controller board. See**"Controller board removal" on page 4-16**.
959.24 Service System Board	EEPROM Retention Error (write failure)	Replace controller board. See**"Controller board removal" on page 4-16**.
959.25 Service System Board	Insufficient device space during hardware programming.	Replace controller board. See**"Controller board removal" on page 4-16**.
959.26 Service System Board	Incremental counter reset exceeds maximum value.	Replace controller board. See**"Controller board removal" on page 4-16**.
959.27 Service System Board	Increment count failed due to maximum value limit.	Replace controller board. See**"Controller board removal" on page 4-16**.
959.28 Service System Board	Invalid SP memory configuration.	Replace controller board. See**"Controller board removal" on page 4-16**.
960.*xx* Service Memory Error	RAM memory error: RAM soldered on the board is bad.	Replace controller board. See**"Controller board removal" on page 4-16**.
961.*xx* Service Memory Failure	RAM memory error: slot 1 RAM is bad.	Check RAM. If RAM is ok, replace the controller. See**"Controller board removal" on page 4-16**.
962.*xx* Service Memory Failure	RAM memory error: slot 2 RAM is bad.	Check RAM. If RAM is ok, replace the controller. See**"Controller board removal" on page 4-16**.
963.*xx* Service Memory Error	RAM memory err	
964.*xx* Service Emulation Error	Download emulation cyclic redundancy check (CRC) failure has occurred. A checksum failure detected in the emulation header or emulation file.	The following actions may be taken: 1. Disable the Download Emulation. 2. Program the download emulation into the code overlay SIMM again. 3. If the problem is not resolved replace the code overlay SIMM, and download emulation again.
975.*xx* Service Standard Network or 975.*xx* Service Network Card *x*	Network error: unrecognizable network port.	Replace the standard network card or the card in the specified slot.
976.*xx* Service Standard Network or 976.*xx* Service Network Card *x*	Unrecoverable software or error in network or network port.	If unable to clear the error message, check the following: • If installed, check network card for correct installation. • If correctly installed, replace the network card. • If a network card is not installed, replace the controller board.

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
978.*xx* Service Standard Network or 978.*xx* Service Network Card *x*	Bad checksum while programming network port.	Check the following: • Make sure you have downloaded the code in binary mode, not ASCII. • Reprogram the Network card. • If the problem persists, and if installed, check the network card for correct installation. • If correctly installed, replace the network card. If a network card is not installed, replace the controller board.
979.*xx* Service Standard Network or 979.xx Service Network Card *x*	Flash parts failed while programming the network port	Check the following: • If installed, check the network card for correct installation. • If correctly installed, replace the network card. • If a network card is not installed, replace the controller board.
980.*xx* Service <*device*> Comm.	Engine is experiencing unreliable communications with the specified device. **Note**: <*device*> can be one of the following: • Duplex unit. • Tray 2.	
981.*xx* Service <*device*> Comm.	Engine protocol violation detected by the specified device. **Note**: <*device*> can be one of the following: • Duplex unit. • Tray 2.	
982.*xx* Service <*device*> Comm.	Communications error detected by the specified device. **Note**: <*device*> can be one of the following: • Duplex unit. • Tray 2.	
983.*xx* Service <*device*> Comm.	Invalid command received by the specified device. **Note**: <*device*> can be one of the following: • Duplex unit. • Tray 2.	
984.*xx* Service <*device*> Comm.	Invalid command parameter received by the specified device. **Note**: <*device*> can be one of the following: • Duplex unit. • Tray 2.	

Service error messages (1XX, 8XX and 9xx) (continued)

Error code	Description	Action
990.*xx* Service <*device*>	This error message indicates that an equipment check condition has occurred in the specified device, but the device is unable to identify the exact component failure. **Note**: <*device*> can be one of the following: • Duplex option. • Tray2	
991.*xx* Service <*device*> Card	The specified device has detected an equipment check in its controller board.	

Fax error log codes

Fax error log codes

Error code	Description	Action
000	No error occurred during fax transmission	No action needed
200	Error occurred when transmitting training.	• Check line quality. • Select a lower ‘Max Speed’. • value under Fax Send settings • Adjust the transmit level.
3XX	Error occurred when receiving image data.	• Check line quality. • Adjust ‘Receive Threshold’. • Select a lower ‘Max Speed’ value under Fax Receive settings.
4XX	Error occurred when sending image data.	• Check line quality. • Adjust ‘Transmit Level’. • Select a lower ‘Max Speed’ value under Fax Receive settings.
5XX	Received unknown response from remote fax device.	No action needed. Issue is with the other device.
6XX	Error occurred when receiving a frame.	• Check line quality. • Adjust ‘Receive Threshold’.
7XX	Error occurred when sending a frame.	• Check line quality. • Adjust ‘Transmit Level’. • Select a lower ‘Max Speed’ value under Fax Send settings.
800	Received EOT unexpectedly from the modem in V34 mode.	• If error persists disable V34 modulation scheme.
802	Too many timeouts occurred during ECM reception.	• If error persists disable ECM mode.
803	Fax cancelled by user	No action needed.
804	Unexpectedly received a disconnect command from the remote end.	• Check line quality. • Adjust Transmit Level/Receive Threshold values. • Remote device could be requesting an unsupported feature.
805	Remote fax device failed to respond to the DCS command.	• Adjust Transmit Level/Receive Threshold values. • Remote device could be malfunctioning.
808	T1 timeout occurred when trying to establish a connection with a remote fax device.	• Adjust Transmit Level/Receive Threshold values.
809	T2 Timeout occurred due to loss of command/response synchronization.	• Adjust Transmit Level/Receive Threshold values.

Fax error log codes (continued)

Error code	Description	Action
80A	T5 Timeout occurred when transmitting image data to remote fax device.	• Check line quality. • Adjust 'Transmit Level'. • Select a lower 'Max Speed'value under Fax Send settings.
80B	Too many errors when transmitting in ECM mode.	• Check line quality. • Adjust 'Transmit Level'. • Select a lower 'Max Speed'value under Fax Send settings.
80C	Remote device failed to respond to the CTC command.	• Select a lower 'Max Speed' value under Fax Send settings. • Adjust 'Transmit Level'.
80D	Received too many requests from remote end to repeat the previous command sent.	• Check line quality. • Adjust 'Transmit Level'. • Check if line conditions on remote end will facilitate a good connection.
80E	Functional limitation- Remote fax device does not support G3 receive capability.	No action needed. Issue with the remote device.
811	Failed to detect a fax device at the remote end.	• Verify MFD is answering to fax call and not a voice call. • Decrease value of 'Rings To Answer' setting.
812	No more data rates available in V34 modulation scheme.	• Adjust to a lower modulation scheme.
813	Timeout occurred after waiting too long to receive a good frame.	• Adjust "Receive Threshold".
814	Tried too many times at selected speed using V34 modulation scheme.	• Adjust 'Transmit Level'. • Adjust to a lower modulation scheme.
815	Fax transmission was interrupted due to power failure.	• Troubleshoot MFP if error persists. See **"Modem / fax card service check" on page 2-70**.
818	Fax transmission failed due to insufficient memory to store scanned image.	Adjust 'Memory Use' setting to allocate more memory for send jobs.
819	Fax transmission failed due to insufficient memory to store received image.	Adjust 'Memory Use' setting to allocate more memory for receive jobs.
81A	A timeout occurred during transmission of a page in ECM mode.	Select a lower 'Max Speed' value under Fax Send settings.
880	Failure to transmit training successfully in V17, V29, V27 terminal modulation schemes.	• Select a lower "Max Speed" under Fax Send settings. • Adjust the "Transmit Level". • Check line quality.
881	Failure to transmit training successfully in V33, V29, V27 terminal modulation schemes.	• Select a lower "Max Speed" under Fax Send settings. • Adjust the "Transmit Level". • Check line quality.

Fax error log codes (continued)

Error code	Description	Action
882	Failure to transmit training successfully in V17, V29 terminal modulation schemes.	• Select a lower “Max Speed” under Fax Send settings. • Adjust the “Transmit Level”. • Check line quality.
883	Failure to transmit training successfully in V17,V27 terminal modulation schemes.	• Select a lower “Max Speed” under Fax Send settings. • Adjust the “Transmit Level”. • Check line quality.
884	Failure to transmit training successfully in V29, V27 terminal modulation schemes.	• Select a lower “Max Speed” under Fax Send settings. • Adjust the “Transmit Level”. • Check line quality.
885	Failure to transmit training successfully in V17terminal modulation scheme.	• Select a lower “Max Speed” under Fax Send settings. • Adjust the “Transmit Level”. • Check line quality.
886	Failure to transmit training successfully in V29 terminal modulation scheme.	• Select a lower “Max Speed” under Fax Send settings. • Adjust the “Transmit Level”. • Check line quality.
887	Failure to transmit training successfully in V27 terminal modulation scheme.	• Select a lower “Max Speed” under Fax Send settings. • Adjust the “Transmit Level”. • Check line quality.
888	Failure to transmit training successfully at 2400 bps in V27 terminal modulation scheme.	• Adjust “Transmit Level”. • Check line quality.
889	Failed to connect at the minimum speed supported by the MFP.	• Adjust “Transmit Level”. • Incompatible connection.
88A	Failed to connect using V.34 modulation scheme.	• Check line quality. • Adjust to a lower modulation scheme. • Adjust Transmit Level Receive Threshold values.
901	No fax tones detected from remote end.	• Verify destination phone number. • Verify that the remote fax is authorized to receive faxes.
902	No dial tone detected.	• Check by enabling ‘Behind a PABX’ setting. • Check phone line. • Check MFD modem hardware.
903	Busy tone detected.	Check with remote end if successive attempts fail.
904	Hardware error detected.	See **“Modem / fax card service check” on page 2-70**.
905	A timeout occurred after dialing the number and waiting for a response.	Check with remote end if successive attempts fail.
906	Fax cancelled by user.	No action needed.

Fax error log codes (continued)

Error code	Description	Action
907	Modem detected a digital line connection.	Verify the MFP is connected to an analog line. See**"Fax transmission service check" on page 2-71**.
908	Phone line was disconnected	Restore phone line connection.
A00	Received request for unsupported function from remote fax device.	No action needed.
A01	Received request for unsupported image width from remote fax device.	No action needed.
A02	Received request for unsupported image resolution from remote fax device.	No action needed.
A03	Received request for unsupported compression type from remote fax device.	No action needed.
A04	Received request for unsupported image length from remote fax device.	No action needed.
F00	Unknown error occurred.	No action needed.

Service checks

Autocompensator mechanism service check

Step	Questions / actions	Yes	No
1	Turn the printer off, and then remove the rear shield. See **"Rear shield removal" on page 4-7**. Check the cable at JSP1 on the controller board for proper connection. Is the cable properly connected?	Go to step 3.	Properly connect the cables, and POR the printer. Go to step 2.
2	Did the printer function correctly after reconnecting the cables?	Problem resolved.	Go to step 3.
3	Turn the printer on, and then verify the following approximate values at JSP1: **JSP1** **Pin** / **Value** / **Pin** / **Value** 2 / +24 V dc / 10 / +5 V dc 4 / +24 V dc / 13 / Ground 6 / Ground / 15 / +5 V dc 7 / Ground / 16 / Ground 8 / Ground Are the values approximately correct?	Replace the autocompensator mechanism. See **"Autocompensator mechanism (ACM)—standard tray removal" on page 4-12**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

90x.xx error

Step	Questions / actions	Yes	No
1	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Check the cable connections. Are all the cable connections secure?	Replace the controller board. See **"Controller board removal" on page 4-16**.	Securely make all the connections. POR the printer.

920.xx–923.xx—Fuser temperature incorrect

This service check covers fuser temperature errors, including 920.xx, 921.xx, 922.xx, and 923.xx.

Step	Questions / actions	Yes	No
1	Check the clearance around the printer. See **"Clearances" on page 1-5**. Does the error clear?	Problem resolved.	Make sure the proper clearance is maintained.
2	Check the fuser connections on the fuser, at JFUSES1 on the controller board, and the AC connection at the LVPS. Are the connections correct?	Replace the fuser. See **"Fuser assembly removal" on page 4-19**.	Problem resolved.

Step	Questions / actions	Yes	No
3	Turn the printer on and check following values on JFUSES1. **JFUSES1** **Pin** / **Value** 5 / +3.3 V dc 6 / Ground 8 / Ground 9 / +3.3 V dc 10 / +3.3 V dc 11 / Ground Are the values approximately correct?	Replace the fuser assembly. See **"Fuser assembly removal" on page 4-19**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

925.01—Fan error service check

Step	Questions / actions	Yes	No
1	Turn off the printer, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Unplug the fan cable at JFAN1 and turn the printer on. Check the following connectors: **JFAN1** **Pin** / **Voltage** 1 / +3.3 V dc 2 / Ground 3 / +24 V dc Are the measured values correct?	Replace the top cover (which includes the fan). See **"Top cover assembly removal" on page 4-9**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

930.xx–935.xx—Printhead errors service check

Step	Questions / actions	Yes	No
1	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Check the cables connected at JMIRR1 and JPH1 on the controller board. Check for damage. Are the cables damaged?	Replace the printhead. See **"Printhead removal" on page 4-42**.	Go to step 2.
2	Turn the printer on, and verify the following values at JMIRR1: **JMIRR1** **Pin** / **Value** 2 / +3.3 V dc 4 / Ground 5 / +24 V dc Are the values approximately correct?	Replace the printhead. See **"Printhead removal" on page 4-42**.	Replace the controller board. Replace the controller board. See **"Controller board removal" on page 4-16**.

936.xx, 937.xx—Transport motor service check

Step	Questions / actions	Yes	No
1	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Check the cable at JCARB1 for proper connection to the controller board Is the cable properly connected?	Reconnect the cable.	Go to step 2.
2	Turn the printer on, and then measure the values of the cable at JCARB1: **JCARB1** **Pin** / **Voltage** 4 / +24 V dc 6 / +24 V dc 8 / +24 V dc 9 / Ground 12 / Ground 13 / +24 V dc 15 / +24 V dc 17 / +24 V dc Are the measured voltages correct?	Replace the main drive gear assembly. See **"Main drive gear assembly with motor removal" on page 4-39**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

950.xx EPROM mismatch failure service check

Warning: Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer will be rendered inoperable:

- Operator panel assembly
- Controller board

Warning: Never install and remove components listed above as a method of troubleshooting components. **Once a component has been installed in a printer, and the printer is powered on, it cannot be used in another printer. It must be returned to the manufacturer.**

This error code indicates a mismatch between the operator panel assembly and the controller board.

Step	Questions / actions	Yes	No
1	Have any updates been made to the firmware?	Reload the firmware and try again. Go to step 2.	Replace the controller board with a new, and not previously installed controller board. See **“Controller board removal” on page 4-16**.
2	Did reloading the firmware correct the problem?	Problem resolved.	Replace the controller board with a new, and not previously installed controller board. See **“Controller board removal” on page 4-16**.

Autocompensator mechanism service check

Step	Questions / actions	Yes	No
1	Turn the printer off, and remove the rear shield. See **“Rear shield removal” on page 4-7**. Check the cable at JSP1 on the controller board for proper connection. Is the cable properly connected?	Replace the autocompensator mechanism. See **“Autocompensator mechanism (ACM)—standard tray removal” on page 4-12**.	Properly connect the cables, and POR the printer. Go to step 2.
2	Did the printer function correctly after reconnecting the cables?	Problem resolved.	Go to step 3.
3	Disconnect the cable at JSP1, and verify the following approximate values: **JSP1** **Pin** / **Voltage** / **Pin** / **Voltage** 2 / +24 V dc / 8 / Ground 4 / +24 V dc / 10 / +5 V dc 6 / Ground / 15 / +5 V dc 7 / Ground / 16 / Ground Are the values approximately correct?	Replace the autocompensator mechanism. See **“Autocompensator mechanism (ACM)—standard tray removal” on page 4-12**.	Replace the controller board. See **“Controller board removal” on page 4-16**.

Bin full sensor service check

<table>
<tr><th>Step</th><th>Questions / actions</th><th>Yes</th><th>No</th></tr>
<tr><td>1</td><td>Is the input sensor dislodged or damaged?</td><td>Repair or replace the autocompensator mechanism. See “Autocompensator mechanism (ACM)—standard tray removal” on page 4-12.</td><td>Go to step 2.</td></tr>
<tr><td>2</td><td>Does the flag rotate freely and interrupt the sensor beam when in normal position?</td><td>Go to step 3.</td><td>Reposition or replace the flag.</td></tr>
<tr><td>3</td><td>Turn the printer off, and remove the rear shield. See “Rear shield removal” on page 4-7. Disconnect the cable at JBIN1 on the controller board. Turn the printer on, and check the voltage values below:
<table>
<tr><th colspan="2">JBIN1</th></tr>
<tr><th>Pin</th><th>Voltage</th></tr>
<tr><td>1</td><td>+5 V dc</td></tr>
<tr><td>2</td><td>+3.3 V dc</td></tr>
<tr><td>3</td><td>Ground</td></tr>
</table>
Are the voltage values correct?</td><td>Problem resolved.</td><td>Replace the controller board. See “Controller board removal” on page 4-16.</td></tr>
</table>

Dead printer service check

A dead printer is a condition where the display is blank, the LED on the operator panel is off, the fan does not turn, no motors turn, and the fuser does not heat.

If a 650-sheet Duo Drawer is installed, remove the option and check the base printer for correct operation. If the base printer operates correctly, replace the 650-sheet Duo Drawer.

Warning: Observe all necessary ESD precautions when removing and handling the controller board or any installed option cards or assemblies. See **"Handling ESD-sensitive parts" on page 4-1**.

CAUTION

When you see this symbol, there is a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you begin, or use caution if the product must receive power in order to perform the task.

Remove any input paper handling options from the printer.

Step	Questions / actions	Yes	No
1	Check the AC line voltage. Is the line voltage correct?	Go to step 2.	Inform the customer.
2	Is the AC line cord damaged?	Replace the line cord.	Go to step 3.
3	Is the JLVPS1 cable correctly connected at JLVPS1 on the controller board?	Go to step 5.	Reconnect the JLVPS1 cable, and go to step 4.
4	Turn the printer off, and then on. Does the problem persist?	Go to step 5.	Problem resolved.
5	**Warning:** Damage to the printer is possible. Be careful to touch only one conductor at a time. Rest the probe against the connector to steady it. With the printer on.verify the following values at JLVPS1: **JLVPS1 (exposed conductors)** **Pin** / **Value** / **Pin** / **Value** 1 / +5 V dc / 7 / +24 V dc 3 / +5 V dc / 9 / +24 V dc 5 / +5 V dc / 11 / +24 V dc Are the values approximately correct?	Replace the controller board. See **"Controller board removal" on page 4-16**.	Replace the LVPS. See**"Low-voltage power supply (LVPS) assembly" on page 4-31**.

Duplex/manual feed sensor (S1) service check

Note: Before performing this service check, ensure that the printer is on a hard level surface.

Step	Questions / actions	Yes	No
1	Enter Diagnostics Menu (turn the printer off, press and hold ◀ and ☑, turn the printer on, and then release the buttons when the installed memory and processor speed displays). Perform the Base Sensor Test. See **"Base Sensor Test" on page 3-18**. 1. Select **Base Sensor Test**, and press **Select** (☑). 2. Select **S1**, and press **Select** (☑). 3. Install tray 1. Does the display indicate InputS1—Media Clear…?	Go to step 2.	Go to step 4.
2	Pull tray 1 out. Does the display indicate InputS1—Media Present…?	The sensor is functioning correctly.	Go to step 3.
3	Remove the tray, and inspect sensor. Is there something obstructing the sensor?	Remove the obstruction and restart the test.	Go to step 4.
4	Inspect the spring-loaded shaft/flag in the tray. The flag portion of the shaft intercepts the sensor, except when a sheet is being staged for duplexing. Does the shaft rotate freely and return to home position (flag at top of rotation)?	Go to step 5.	Replace the tray with a new one.
5	Is the flag on the shaft broken?	Replace the tray.	Go to step 6.
6	Is the cable correctly connected to JFUSES1 on the controller board and to the sensor. Is the sensor cable properly connected?	Go to step 7.	Reconnect the cable. If the problem persists, go to step 7.
7	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Turn the printer on, and check the values at JFUSES1: **JFUSES1** **Pin** / **Value** 8 / Ground 9 / +3.3 V dc Are the values approximately correct?	Replace the duplex sensor. See **"Duplex sensor removal" on page 4-17**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Front door sensor or switches service check

Step	Questions / actions	Yes	No
1	Enter Diagnostics Menu (turn the printer off, press and hold ◀ and ☑, turn the printer on, and then release the buttons when the installed memory and processor speed displays). Perform the Base Sensor Test. See **"Base Sensor Test" on page 3-18**. 1. Select **Base Sensor Test**, and press **Select** (☑). 2. Select **Front Door**, and press **Select** (☑). 3. Open and close the front door, and observe the display. Does the display indicate Value Closed with the door closed and Value Opened with the door opened?	Sensor, toner door, and right doors are OK.	Go to step 2.
2	Open the front door and check the thin, tall, plastic web (pivot plate) at the top right of the printer. With the other covers in place and closed, this web interacts with switches in the door. Open the toner cover and check the motion of the web. Is the web loose, damaged, or missing?	Replace the right cover assembly. See**"Right cover removal" on page 4-7**.	Go to step 3.
3	Open the toner door and inspect the vertical web that pushes and rotates the pivot plate. Is it damaged?	Replace the top cover assembly. See **"Top cover assembly removal" on page 4-9**.	Go to step 4.
4	With the front cover open, inspect the two switches. Using a tool, such as a spring hook, push the metal arms to check the movement. Is there any damage to the switches or the surrounding area?	Replace the right cover assembly. See**"Right cover removal" on page 4-7**.	Go to step 5.
5	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Turn the printer on, and verify the following values at JINT1 and JCVR1: **JINT1**: Pin 1 = +5 V dc; Pin 2 = Ground **JCVR1**: Pin 1 = +24 V dc Are the values approximately correct?	Go to step 6.	Replace the controller board. See **"Controller board removal" on page 4-16**.
6	Close the front cover and the toner door. Be sure the right cover is in place. Turn the printer off, and then disconnect the cables at JINT1 and JCVR1. Test continuity at the connector under the following conditions: • **With front cover and toner door closed**: Test pin 1 and pin 3 at JINT1 cable end and pin 1 and pin 2 at JCVR1 cable end. • **With one or both doors open**: Pin 2 and 3 at JINT1 cable end should indicate continuity, but Pin 1 and 2 at JCVR1 should have no continuity. Are the tests verified?	Contact your next level of support.	Replace the front cover assembly. See **"Front cover assembly removal" on page 4-2**.

Fuser exit sensor service check

Step	Questions / actions	Yes	No
1	Enter Diagnostics Menu (turn the printer off, press and hold ◀ and ☑, turn the printer on, and then release the buttons when the installed memory and processor speed displays). Perform the Base Sensor Test. See **"Base Sensor Test" on page 3-18**. 1. Select **Base Sensor Test**, and press **Select** (☑). 2. Select **Fuser Exit Sensor**, and press **Select** (☑). 3. Open and close the front door, and inspect the fuser exit sensor located on the LVPS shield. Is the sensor dislodged or damaged?	Correct the sensor or replace it. See **"" on page 4-22**.	Go to step 2.
2	Rotate the flag (paper diverter) in and out of the sensor. Does the display indicate Media Clear and Media Present with the cycle?	Sensor is good.	Go to step 3.
3	Does the flag rotate freely, but returns to block the sensor?	Go to step 4.	Replace the fuser. See**"Fuser assembly removal" on page 4-19**.
4	Is the cable correctly connected to JBIN1 on the controller board and to the sensor. is the sensor properly connected?	Go to step 5.	Reconnect the cable.
5	Make sure the printer is turned off. Disconnect the cable at the sensor and at JBIN1 on the controller board. Turn the printer on and check the voltage values: **JBIN1** **Pin** / **Value** 4 / +5 V dc 5 / +0 V dc (no media), +3.3 V dc (media) 6 / Ground Does the voltage values correct?	Replace the fuser exit sensor. See **"" on page 4-22**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Fuser service check

Step	Questions / actions	Yes	No
1	Some low-voltage power supply FRUs have a voltage selector switch. If it does, the switch needs to be set to the correct voltage for your area Has the LVPS been changed?	Check the switch on the side of the LVPS to verify the correct voltage is set.	Go to step 2.
2	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Check the cable at JFUSES1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage. Is the cable damaged?	Replace the fuser cable.	Go to step 3.
3	Check the connector JLVPS1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage. Is the cable damaged?	Repair or replace the LVPS cable. See **"Low-voltage power supply (LVPS) assembly" on page 4-31**.	Go to step 4.
4	Check the power cable on the left side of the fuser and the thermistor cables and connections on the right side of the fuser. Are the cables or connectors damaged?	Repair the cables. If the cables cannot be repaired, replaced the fuser. See **"Fuser assembly removal" on page 4-19**.	Go to step 5.
5	Disconnect the cable at JFUSES1 on the controller board, and check the following voltages: **JFUSES1** **Pin** / **Voltage** 5 / +3.3 V dc 6 / Ground 8 / Ground 10 / +2.7 V dc 11 / Ground Are the voltages correct?	Go to step 6.	Replace the controller board. See **"Controller board removal" on page 4-16**.
6	Replace the fuser. See **"Fuser assembly removal" on page 4-19**. Does the error clear?	Problem resolved.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Input sensor (S2) service check

The Input sensor (S2) is part of the ACM FRU.

Step	Questions / actions	Yes	No
1	Enter Diagnostics Menu (turn the printer off, press and hold ◀ and ☑, turn the printer on, and then release the buttons when the installed memory and processor speed displays). Perform the Base Sensor Test. See **"Base Sensor Test" on page 3-18**. 1. Select **Base Sensor Test**, and press **Select** (☑). 2. Select **S2**, and press **Select** (☑). 3. Pull tray 1 out, and rotate the S2 sensor flag (S2 is located in front of the center autocompensator mechanism housing.) It should rotate freely and return to its original position. Is the input (S2) sensor flag damaged?	Replace the autocompensator mechanism. See **"Autocompensator mechanism (ACM)—standard tray removal" on page 4-12**.	Go to step 2.
2	Watch the display while rotating the flag. Does the display indicate Media Clear and Media Present?	Problem resolved.	Go to step 3.
3	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Is the JSP1 cable connector properly connected to the controller board?	Go to step 4.	Reseat the connector.
4	Turn the printer on, and check the voltage at JSP1 pin 15. Is the voltage approximately +5 V dc?	Replace the autocompensator mechanism. See **"Autocompensator mechanism (ACM)—standard tray removal" on page 4-12**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Main drive gear assembly (EP drive) service check

<table>
<tr><th>Step</th><th>Questions / actions</th><th>Yes</th><th>No</th></tr>
<tr><td>1</td><td>Turn the printer off, and remove the rear shield. See “Rear shield removal” on page 4-7. Check the cable at JCARTB1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage.
Is the cable damaged?</td><td>Replace the JCARTB1 cable.</td><td>Go to step 2.</td></tr>
<tr><td>2</td><td>Disconnect the cable at JCARTB1 on the controller board, and verify the following values.
<table><tr><th colspan="2">JCARTB1</th></tr><tr><th>Pin</th><th>Voltage</th></tr><tr><td>4</td><td>+24 V dc</td></tr><tr><td>6</td><td>+24 V dc</td></tr><tr><td>8</td><td>+24 V dc</td></tr><tr><td>9</td><td>Ground</td></tr><tr><td>12</td><td>Ground</td></tr><tr><td>13</td><td>+24 V dc</td></tr><tr><td>15</td><td>+24 V dc</td></tr><tr><td>17</td><td>+24 V dc</td></tr></table>Are the voltages correct?</td><td>Go to step 3.</td><td>Replace the controller board. See “Controller board removal” on page 4-16.</td></tr>
<tr><td>3</td><td>Replace the main drive assembly. See “Main drive gear assembly with motor removal” on page 4-39.
Does the error clear?</td><td>Problem resolved.</td><td>Replace the controller board. See “Controller board removal” on page 4-16.</td></tr>
</table>

Operator panel service check

Warning: Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer will be rendered inoperable:

- Operator panel assembly
- Controller board

Warning: Never install and remove components listed above as a method of troubleshooting components. **Once a component has been installed in a printer, and the printer is powered on, it cannot be used in another printer. It must be returned to the manufacturer.**

One or more operator panel buttons fail

Step	Questions / actions	Yes	No
1	Run the Button Test. See **"Button Test" on page 3-13** in Diagnostics Menu. Did any of the buttons fail the test?	Replace the operator panel assembly. See **"Operator panel removal" on page 4-76**.	Go to step 2.
2	Turn the printer off, and remove the rear shield. **"Rear shield removal" on page 4-7**. Disconnect the operator panel assembly cable at JOPP1 on the controller board. Turn on the printer, and verify the following voltages: **JOPP1** **Pin** / **Voltage** 2 / +5 V dc 4 / Ground 5 / +5 V dc 6 / +3.3 V dc 7 / Ground Are the voltage values approximately correct?	Replace the operator panel. See **"Operator panel removal" on page 4-76**. If the problem is not resolved, replace the operator panel cable. See **"Op panel cable" on page 4-79**	Replace the controller board. See **"Controller board removal" on page 4-16**.

Operator panel display blank, five *beeps*

Service tip: The printer has detected a problem with the controller board, the operator panel assembly cable (part of the front cover assembly), or the operator panel assembly if POST does not complete. The printer emits five *beeps*, and sticks in a continuous pattern until the printer is turned off.

Step	Questions / actions	Yes	No
1	Is the operator panel assembly cable properly installed at controller board JOPP1 and at the operator panel assembly?	Go to step 2.	Reinstall the cable.

Step	Questions / actions	Yes	No
2	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Disconnect the operator panel assembly cable at JOPP1 on the controller board. Turn on the printer, and verify the following voltages: **JOPP1** **Pin** / **Voltage** 2 / +5 V dc 4 / Ground 5 / +5 V dc 6 / +3.3 V dc 7 / Ground Are the voltage values approximately correct?	Go to step 3.	Replace the controller board. See **"Controller board removal" on page 4-16**.
3	Check continuity of the operator panel assembly cable. Is there continuity?	Replace the operator panel assembly. See **"Operator panel removal" on page 4-76**.	Replace the operator panel cable. See **"Op panel cable" on page 4-79**

Operator panel display blank, printer *beeps* five times and pauses

Step	Questions / actions	Yes	No
1	Turn off the printer, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Disconnect the cable at JOPP1 on the controller board. Verify the following values: **JOPP1** **Pin** / **Voltage** 1 / 0 V dc 2 / +5 V dc 3 / 0 V dc 4 / Ground 5 / +5 V dc 6 / +3.3 V dc 7 / Ground Are all these values approximately correct?	Go to step 2.	Replace the controller board. See **"Controller board removal" on page 4-16**.
2	Check for continuity in the operator panel cable connector. Do all the conductors indicate continuity?	Replace the operator panel. See **"Operator panel removal" on page 4-76**.	Replace the operator panel cable. See **"Op panel cable" on page 4-79**

Operator panel displays all diamonds, no *beeps*

Step	Questions / actions	Yes	No
1	Turn off the printer, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Disconnect the cable at JOPP1 on the controller board. Verify the following values: **JOPP1** **Pin** / **Voltage** 1 / 0 V dc 2 / +5 V dc 3 / 0 V dc 4 / Ground 5 / +5 V dc 6 / +3.3 V dc 7 / Ground Are all these values approximately correct?	Go to step 2.	Replace the controller board. See **"Controller board removal" on page 4-16**.
2	Check for continuity in the operator panel cable connector. Do all the conductors indicate continuity?	Replace the operator panel. See **"Operator panel removal" on page 4-76**.	Replace the operator panel cable. See **"Op panel cable" on page 4-79**

Operator panel displays all diamonds, five *beeps*

Step	Questions / actions	Yes	No
1	Turn off the printer, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Disconnect the cable at JOPP1 on the controller board. Verify the following values: **JOPP1** **Pin** / **Voltage** 1 / 0 V dc 2 / +5 V dc 3 / 0 V dc 4 / Ground 5 / +5 V dc 6 / +3.3 V dc 7 / Ground Are all these values approximately correct?	Go to step 2.	Replace the controller board. See **"Controller board removal" on page 4-16**.
2	Check for continuity in the operator panel cable connector. Do all the conductors indicate continuity?	Replace the operator panel. See **"Operator panel removal" on page 4-76**.	Replace the operator panel cable. See **"Op panel cable" on page 4-79**

Operator panel display is dim and unchanging

Step	Questions / actions	Yes	No
1	Turn off the printer, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Disconnect the cable at JOPP1 on the controller board. Verify the following values: **JOPP1** **Pin** / **Voltage** 1 — 0 V dc 2 — +5 V dc 3 — 0 V dc 4 — Ground 5 — +5 V dc 6 — +3.3 V dc 7 — Ground Are all these values approximately correct?	Go to step 2.	Replace the controller board. See **"Controller board removal" on page 4-16**.
2	Check for continuity in the operator panel cable connector. Do all the conductors indicate continuity?	Replace the operator panel. See **"Operator panel removal" on page 4-76**.	Replace the operator panel cable. See **"Op panel cable" on page 4-79**.

Op panel USB cable service check

Step	Questions / actions	Yes	No
1	Check the op panel USB cable for continuity. Is there continuity?	Replace the controller board. See **"Controller board removal" on page 4-16**	Replace the Op panel USB cable.

USB service check

Step	Questions / actions	Yes	No
1	Is the USB cable properly connected to the MFP and host PC?	Go to step 2.	Properly connect the cable at both ends.
2	Try a different USB cable. Does this fix the issue?	Issue fixed.	Go to step 3.
3	Connect a different device to the USB cable. Did the host PC see the device?	Replace the RIP/system board.See **"Controller board removal" on page 4-16**.	There is an issue with the host machine.

Networking service check

Note: Before starting this service check, print out the network setup page. This page is found under Menu - Reports - Network Settings. Consult the network administrator to verify that the physical and wireless network settings displayed on the network settings page for the device are properly configured. If a wireless network is used, verify that the printer is in range of the host computer or wireless access point, and there is no electronic interference. Have the network administrator verify that the device is using the correct SSID, and wireless security protocols. For more network troubleshooting information, consult the Lexmark Network Setup Guide.

Step	Questions / actions	Yes	No
1	If the device is physically connected to the network, verify that the ethernet cable is properly connected on both ends. Is the cable properly connected?	Go to step 3. If the network is wireless, got to step 3.	Go to step 2.
2	Connect the ethernet cable. Did this fix the problem?	Problem resolved	Go to step 3.
3	Check the printer's online status under Printers and Faxes on the host computer. Delete all print jobs in the print queue. Is the printer online and in a **Ready** state.	Go to step 5.	Go to step 4.
4	Change the printer status to online. Did this fix the issue?	Problem resolved.	Go to step 5.
5	Does the IP address displayed on the network settings page match the IP address in the port of the drivers using the printer?	Go to step 10.	Go to step 6.
6	Does the LAN use DHCP? **Note:** A printer should use a static IP address on a network.	Go to step 7.	Go to step 9.
7	Are the first two segments if the IP address 169.254?	Go to step 8.	Go to step 9
8	POR the printer. Is the problem resolved	Problem resolved	Go to step 10.
9	Reset the address on the printer to match the IP address on the driver. Did this resolve the issue?	Problem fixed.	Go to step 10.
10	Have the network admin verify that the printer and PC's IP address have identical subnet addresses. Are the subnet addresses the same?	Go to step 12.	Go to step 11.
11	Using the subnet address supplied by the network admin, assign a unique IP address to the printer. **Note:** The printer IP address should match the IP address on the printer driver. Did this fix the problem?	Problem resolved.	Go to step 12.
12	Is the device physically connected (ethernet cable) to the network?	Go to step 13.	Go to step15.

Step	Questions / actions	Yes	No
13	Try using a different ethernet cable. Did this remedy the situation?	Problem resolved	Go to step 14.
14	Have the network administrator check the network drop for activity. Is the drop functioning properly?	Replace the controller board. Go to **"Controller board removal" on page 4-16**	Contact the network administrator.
15	Is the printer on the same wireless network as the other devices?	Go to step 17.	Go to step 16.
16	Assign the correct wireless network to the printer. Did this fix the problem?	Problem resolved	Go to step 17.
17	Are the other devices on the wireless network communicating properly?	Go to step 18.	Contact the network administrator.
18	Verify that the wireless card is properly seated on the controller board. Is the wireless card seated correctly?	Go to step 20.	Go to step 19.
19	Properly reseat the wireless card. Did this fix the problem?	Problem resolved.	Go to step 20.
20	Is the antenna damaged?	Go to step 22.	Go to step 21.
21	Replace the antenna. Did this fix the problem?	Problem resolved	Go to step 22.
22	Verify that the antenna is properly connected to the wireless card. Is it connected correctly?	Go to step 24.	Go to step 23.
23	Properly connect the antenna. Did this fix the problem?	Problem resolved	Go to step 24.
24	Check pin 6 for +3.3V, and Pin 5 for +5V. on connector JUSBW1 of the controller board. Pin 1 and 4 are GND. Are the voltages and GNDs correct?	Replace the wireless card. Go to **"Wireless network card" on page 4-52**	Replace the controller board. Go to **"Controller board removal" on page 4-16**

Print quality service check

Note: This symptom may require replacement of one or more CRUs (Customer Replaceable Units) designated as supplies or maintenance items, which are the responsibility of the customer. With the customer's permission, you may need to install a developer (toner) cartridge or photo conductor unit.

Service tip

Before troubleshooting any print quality problems, do the following:

1. Print a menu settings page, and check the life status of all supplies. Any supplies that are low should be replaced.
   To print a menu settings page:
   a. press **Menu** ( ) on the operator panel.
   b. Select **Reports** from the Admin Menu, and press **Select** ( ).
   c. Select **Menu Settings**, and press **Select** ( ).

   Note: Be sure and keep the original menu page to restore the customer's custom settings if needed.
2. On the menu page, make sure the following is set to the default level:
   - Color Correction: Set to Auto.
   - Print Resolution: Set to 1200 dpi (print quality problems should be checked at different resolution settings).
   - Toner Darkness: Set to 4 (default).
   - Color Saver: Set to OFF.
   - RGB Brightness, RGB Contrast, RGB Saturation: Set to 0.
   - Color Balance: Select Reset Defaults to zero out all colors.
   - Check the paper type, texture and weight settings against what is loaded in the printer.

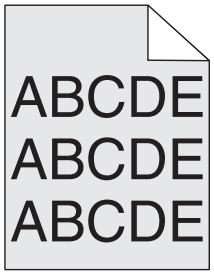
Once the printer has been restored to its default levels, do the following:

1. Inspect the imaging unit for damage, including the developers and toner cartridges. Replace if damaged.
2. If paper other than 20lb plain letter/A4 paper is being used, load 20lb plain letter/A4.
3. Print the Print Quality pages to see if the problem remains. Look for variations in the print from what is expected.
   To print the print Quality pages
   a. Enter Diagnostics (turn off the printer, press and hold **Left** ( ) and **Select** ( ), turn on the printer and release when the installed memory and processor speed displays).
   b. Select **PRINT TESTS**, and press **Select** ( ).
   c. Select **Print Quality Pgs**, and press **Select** ( ).
      The message Printing Quality Test Pages is displayed.

An incorrect printer driver for the installed software can cause problems. Incorrect characters could print, and the copy may not fit the page correctly.

Measure all voltages from the connector to the printer ground.

Print quality—background



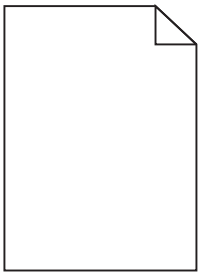
Service tip: Some background problems can be caused by rough papers, non-Lexmark toner cartridges or if the media texture is set to the rough setting.

Some slick or coated papers may also cause background problems. Some problems occur with printers that run a large amount of graphics in a humid environment.

Step	Questions / actions	Yes	No
1	Read the current status of the imaging unit from the customer menus. To view the status of the photoconductor units: 1. In Ready mode, press **Menus** (⊶). 2. Select **Reports**, and press **Select** (☑). 3. Select **Device Statistics**, and press **Select** (☑). It is possible a new imaging unit was installed, but the counter was not reset. Has the imaging unit been recently replaced?	Reset the value. To reset this value: 1. In Ready mode, press **Menus** (⊶). 2. Select **Supplies Menu**, and press **Select** (☑). 3. Select **Replace Supply**, and press **Select** (☑). 4. Select the imaging unit you want to change, and press **Select** (☑). 5. Select **Yes**, and press **Select** (☑). If this does not fix the problem, go to step 2.	Go to step 2.
2	Is the background only one of the primary colors; yellow, cyan, magenta, or black?	Replace the developer unit for the background color and retest. See **"Developer unit removal" on page 4-30**. Go to step 3.	Go to step 4.
3	Did replacing the developer unit correct the problem?	Problem resolved.	Go to step 4.
4	Replace the photoconductor unit. Does this fix the problem?	Problem resolved.	Go to step 5.
5	Check the high-voltage contact from the HVPS to the image transfer unit (ITU). Is a problem found?	Replace the failing part: • Image transfer unit (ITU). See **"Image transfer unit (ITU)" on page 4-25**. • High-voltage power supply (HVPS). See **"High-voltage power supply (HVPS) assembly removal" on page 4-24**.	Go to step 6.
6	Reseat the cable in the JHVPS1 connector. Does this fix the problem?	Problem resolved.	Go to step 7.
7	Replace the HVPS. See **"High-voltage power supply (HVPS) assembly removal" on page 4-24**. Does this fix the problem?	Problem resolved.	Go to step 8.

Step	Questions / actions	Yes	No
8	Clean the printhead. Does this fix the problem?	Problem resolved.	Replace the printhead. See **"Printhead removal" on page 4-42**.

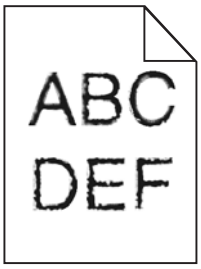
Print quality—blank page



Step	Questions / actions	Yes	No
1	Is all the packing material for the imaging unit in question removed?	Go to step 2.	Remove the packing material.
2	Print a document that requires all four colors with just a few characters to verify if one specific color is a problem. For example, print the Print Quality Test Pages: 1. Enter Diagnostic mode. (Turn the printer off, press and hold **Left** (◀) and **Select** (☑), turn the printer on, and then release the buttons when the installed memory and processor speed displays.) 2. Select **PRINT TESTS**, and press **Select** (☑). 3. Select **Prt Qual Pgs**, and press **Select** (☑). Is only one color missing?	Replace the developer unit for the missing color.	Go to step 3.
3	Replace the imaging unit. See **"Imaging unit (IU) removal" on page 4-28**. Does this fix the problem?	Problem resolved.	Go to step 4.

Step	Questions / actions	Yes	No
4	Enter the Diagnostics Menu (turn the printer off, press and hold ◀ and ☑, turn the printer on, and release the buttons when installed memory and processor speed displays), and run the appropriate cartridge drive motor test for the missing color: 1. Select **MISC TESTS** in the Diag Menu, and press **Select** (☑). 2. Select **Motor Detect**. Remove Cartridge. press Select appears. **Note:** Do not press **Select** yet. 3. Remove all toner cartridges and the imaging unit. 4. Close the front cover. If you press **Select** before closing the front cover, a message appears: Close Cover. press Select. 5. press **Select** (☑). Motor Detection In Progress… appears. The motor detection process takes about 10 seconds, and stops automatically. Detect Complete. Rebooting… appears, and the printer performs a POR (Power On Reset). Did the motor run?	Go to step 5.	Replace the Main drive gear assembly. See **"Main drive gear assembly with motor removal" on page 4-39**.
5	Remove the developer unit. See **"Developer unit removal" on page 4-30**. Check the developer cartridge contacts from the HVPS to the IU. Are all the toner cartridge contacts clean on both the Pin and IU?	Go to step 6.	Clean the developer cartridge contacts. See **"Developer unit removal" on page 4-30**.
6	Are all the spring-loaded Pin in the HVPS free to move in and out with an equal amount of spring force?	Go to step 7.	Replace the HVPS. See **"High-voltage power supply (HVPS) assembly removal" on page 4-24**.
7	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Check the continuity between the spring-loaded Pin and the JSC1 connector on the controller board. Are all conductors continuous?	Go to step 8.	Replace the cable.
8	Replace the printhead. See **"Printhead removal" on page 4-42**. Did this fix the problem?	Problem resolved.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Print quality—blurred or fuzzy print



Run the automatic alignment. The TPS sensor may be damaged. To run Reset Color Cal:

1. Enter the Diagnostics Menu. (Turn the printer off, press and hold ◀ and ☑, turn the printer on, and release the buttons when installed memory and processor speed displays.
2. Select **TPS Setup** from Diag Menu, and press **Select** (☑).
3. Select **Reset Color Cal**, and press **Select** (☑).
   Resetting appears. When the reset is complete, the screen is automatically returned to TPS Setup.

Blurred or fuzzy print is usually caused by a problem in the main drive gear assembly or in the image transfer unit (ITU). Check the main drive gear assembly and ITU for correct operation.

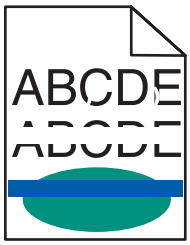
Blurred print can also be caused by incorrect feeding from one of the input paper sources, media trays, or duplex paper path.

Check the high-voltage spring contacts to ensure they are not bent, corroded, or damaged. Replace the high-voltage power supply as necessary. See **"High-voltage power supply (HVPS) assembly removal" on page 4-24**.

Print quality—half-color page

A photoconductor unit is not properly seated. Reset the specific photoconductor unit.

Print quality—horizontal banding



Print the Print Defect Page:

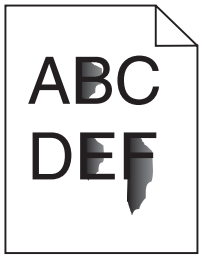
1. At the Ready prompt, press **Menu** (⚿).
2. Select **Reports**, and press **Select** (☑).
3. Select **Print Defects,** and press **Select** (☑).

Step	Questions / actions	Yes	No
1	Measure the distance between repeating bands. Is the distance between bands either 34.6 or 94.2 mm?	Replace the photoconductor unit. Remove the imaging unit and remove the original developer units, and then put them back into the new photoconductor unit, and reinstall the imaging unit. See **"Imaging unit (IU) removal" on page 4-28**.	Go to step 2.
2	Does the distance measure 95 mm or 108 mm?	Replace the fuser. See **"Fuser assembly removal" on page 4-19**.	Go to step 3.
3	Does the distance measure 37.7, 55, or 78.5 mm?	Replace the ITU. See **"Image transfer unit (ITU)" on page 4-25**.	Go to step 4.
4	Does the distance measure 43.9 mm or 45.5?	Replace the developers that match the missing color (black, cyan, magenta, or yellow). See **"Developer unit removal" on page 4-30**.	Check the various rollers in the printer for debris.

Print quality—horizontal line

Either the photoconductor unit or one of the developer units that make up the imaging unit is defective. Remove and inspect the imaging unit. Replace the damaged part of the imaging unit. See **"Imaging unit (IU) removal" on page 4-28**.

Print quality—insufficient fusing



Step	Questions / actions	Yes	No
1	Is the printer setup to use the correct media?	Go to step 2.	Change the settings to indicate the correct media.
2	Check the fuser connections on the left and right side of the printer. Are the cables and connection correct?	Go to step 3.	Properly reconnect or replace the cables.
3	Is the fuser properly installed?	Go to step 4.	Install the fuser properly.
4	Replace the fuser. See **"Fuser assembly removal" on page 4-19**. Does this fix the problem?	Problem resolved.	Replace the LVPS. see **"Low-voltage power supply (LVPS) assembly" on page 4-31**.

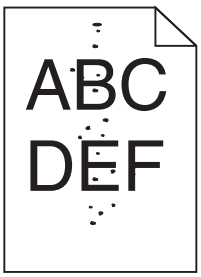
Print quality—missing image at edge

Remove and reseat the following:

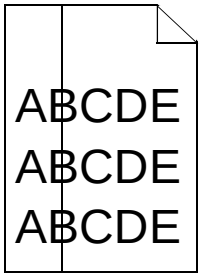
- Toner cartridge
- Imaging unit
- Developer units.

Print quality—mottle (2–5mm speckles)

Keep running prints through, and the problem normally clears up. If the problem persists, replace the developer cartridge.



Print quality—narrow vertical line



Step	Questions / actions	Yes	No
1	Replace the photoconductor unit. See **“Imaging unit (IU) removal” on page 4-28**.	Problem solved.	Replace the developer unit. See **“Developer unit removal” on page 4-30**

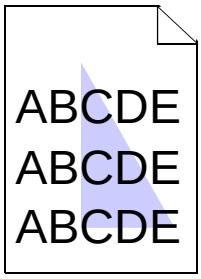
Print quality—random marks

Service tip: The primary cause of random marks is due to loose material moving around inside the printer and attaching to the photoconductor unit, developer roll, or transfer belt.

Step	Questions / actions	Yes	No
1	Is there any loose or foreign material on the imaging unit?	Inspect the imaging unit by looking at the individual developers and photoconductors. Clean or replace the faulty unit. See **“Imaging unit (IU) removal” on page 4-28**.	Go to step 2.
2	Is there any loose or foreign material on the developer roll?	Replace the developer unit.	Go to step 3.
3	Is there any loose or foreign material on the transfer belt?	Replace the image transfer unit. See **“Image transfer unit (ITU)” on page 4-25**.	Contact your next level of support.

Print quality—residual image

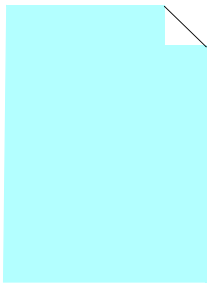
Service tip: Install a new print cartridge, if available, before doing this service check. Residual image can be caused by the photoconductor, cleaning blade, and other parts inside the print cartridge.



Step	Questions / actions	Yes	No
1	Check the condition of the imaging unit using the customer menus (administrative menus): 1. At the Ready prompt, press **Menu** (⚿). 2. Select **Supplies Menu**, and press **Select** (☑). 3. Select **Imaging Kit,** and press **Select** (☑). Does the display indicate OK?	Go to step 2.	Replace the imaging unit or the photoconductor unit. See **“Imaging unit (IU) removal” on page 4-28**.
2	Measure the distance from the original image to the same point on the residual image. Is the distance 43.9 mm?	Replace the developer corresponding to the color of the image. See **“Developer unit removal” on page 4-30**.	Replace the imaging unit or the photoconductor unit. See **“Imaging unit (IU) removal” on page 4-28**.
3	Is the distance between the original image and the residual image 94.2 mm?	Replace the photoconductor. See **“Developer unit removal” on page 4-30**.	
4	Run the Menu Setting Page twice to clear any debris. To print a menu settings page: 1. press **Menu** (⚿) on the operator panel. 2. Select **Reports** from the Admin Menu, and press **Select** (☑). 3. Select **Menu Settings**, and press **Select** (☑). Is there still any toner contamination on the fuser assembly?	Replace the fuser. See **“Fuser assembly removal” on page 4-19**.	Contact your next level of support.

Print quality—solid color page

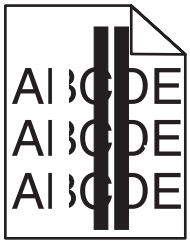
Service tip: A solid color page is generally caused by a problem in the high-voltage controller or an incorrect high voltage in the printing process resulting in toner development on the entire photoconductor drum.



Step	Questions / actions	Yes	No
1	Replace the photoconductor unit (part of the imaging unit). Remove the imaging unit and remove the developers. Place the original developers in the new photoconductor, and then replace the imaging unit. See **"Imaging unit (IU) removal" on page 4-28**. Does this fix the problem?	Problem resolved.	Go to step 2.
2	A faulty printhead can cause the problem. To test the printhead for solid colors, place a narrow strip of paper over the gap between the developers. Make sure the paper stays in place when you replace the imaging unit. This will block the laser from discharging the photoconductors. Print a Quality Test Page. Does the page have a white vertical band?	Replace the printhead. See **"Printhead removal" on page 4-42**.	Go to step 3.
3	Check the high-voltage contact from the HVPS to the photoconductor charge roll. Ensure the contact springs are properly mounted and that the charge roll contact spring is making good contact with the HPVS spring that runs through the left printer frame. See **"Imaging unit contacts" on page 4-43** to view the proper mounting and for removal procedures. Are the spring(s) defective?	Replace the transfer contact assembly. See **"Imaging unit contacts" on page 4-43**.	Go to step 4.
4	Turn the printer off, and check the continuity of the HVPS cable. Is there continuity?	Go to step 5.	Replace the cable assembly.
5	Replace the HVPS. See **"High-voltage power supply (HVPS) assembly removal" on page 4-24**. Did this solve the problem?	Problem resolved.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Print quality—vertical banding

Replace the developer cartridge.



Printhead service check

This service check includes the following errors:

Error codes	Color
106.xx	Yellow
107.xx	Cyan
108.xx	Magenta
109.xx	Black

Step	Questions / actions	Yes	No
1	Turn the printer off, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Check the cable at JMIRR1 for proper connection to the controller board, the printhead cable for pinch points, and the cable or connector for any other damage. Is the cable damaged?	Replace the printhead. See **"Printhead removal" on page 4-42**.	Go to step 2.
2	Turn the printer on, and then wait until the printer posts an error. Using a voltmeter, check the following values at JMIRR1: **JMIRR1** **Pin** / **Volt. (V dc)** 1 / 5 2 / 3.3 3 / 5 4 / GND 5 / 24 Are the values approximately correct?	Replace the controller board See **"Controller board removal" on page 4-16**.	Replace the printhead. See **"Printhead removal" on page 4-42**.

Toner meter cycle (TMC) card

Step	Questions / actions	Yes	No
1	Perform the Base Sensor Test: 1. Enter Diagnostics menu (turn off the printer, press and hold ◀ and **Select** (☑), turn on the printer, and release the buttons when the installed memory and processor speed displays). 2. Select **Base Sensor Test,** and press **Select** (☑). 3. Select the sensor you want to test, open the toner door, remove the corresponding toner cartridge, and press **Select** (☑). 4. Note whether the operator panel shows a change in state. **Note**: If the reflective disk is not showing on the cartridge, rotate the gear clockwise to expose the reflective surface. For additional information about the Base Sensor Test, see **"Base Sensor Test" on page 3-18**. Does the operator panel display a change of state?	Replace the toner cartridge.	Replace the toner meter cycle (TMC) card. See **"Toner meter cycle (TMC) card removal" on page 4-45**.

Toner sensors (Y, C, M, K) on TMC card

Step	Questions / actions	Yes	No
1	Remove the toner cartridge, and inspect the lenses on the toner meter cycle (TMC) card. Are the lenses blocked, damaged, or dirty?	Repair or replace the TMC card. See **"Toner meter cycle (TMC) card removal" on page 4-45**.	Go to step 2.
2	Turn off the printer, and remove the rear shield. See **"Rear shield removal" on page 4-7**. Disconnect the cable at the JSP1 connector on the controller board. Turn the printer on, and measure the voltages below: **JSP1** **Pin** / **Voltage** 1 Ground 2 +3.3 V dc 3 +3.3 V dc 4 +3.3 V dc 5 +3.3 V dc 6 +0.0 V dc Are any of the voltage values incorrect?	Replace the controller board. See **"Controller board removal" on page 4-16**.	Replace the TMC card. See **"Toner meter cycle (TMC) card removal" on page 4-45**.

Transfer roll service check

Step	Questions / actions	Yes	No
1	Remove the ITU. See **"Image transfer unit (ITU)" on page 4-25**. Check the contacts between the HVPS and the ITU. Clean the contacts and recheck. Does the error reoccur?.	Replace the ITU. See **"Image transfer unit (ITU)" on page 4-25**. Go to step 2.	Problem resolved.
2	Does the new ITU fix the problem	Problem resolved.	Go to step 3.
3	Turn the printer off, and remove the rear shield. See**"Rear shield removal" on page 4-7**. . Turn the printer on, and check the cable at JHVPS1 connector on the controller board without disconnecting it. Verify the following voltage values: **JHVPS1** **Pin** / **Voltage** 7 / +3.3 V dc 11 / +3.3 V dc 13 / +24 V dc 14 / Ground 16 / Ground Are the values approximately correct?	Replace the HVPS**"High-voltage power supply (HVPS) assembly removal" on page 4-24**.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Tray 1 sensor service check

Step	Questions / actions	Yes	No
1	When the printer is in Ready state, pull the standard tray out. The display should indicate Tray 1 Missing. Insert the tray. Does the message remain on the display?	Go to step 2.	Go to step 4.
2	Check the vertical well at the right rear of the tray for damage. Is the tray damaged?	Replace the tray.	Go to step 3.
3	Check for a dislodged sensor. Is the sensor dislodged?	Replace the tray 1 sensor.	Contact the next level of support.
4	Does the message Tray 1 Missing fail to appear when the tray is pulled out?	Go to step 5.	Problem resolved.
5	Turn off the printer, and remove the rear shield. **"Rear shield removal" on page 4-7**. Disconnect the cable at JTRAY1 connector on the controller board. Turn the printer on, and measure the voltages below: **JTRAY1** **Pin** / **Voltage** 1 / +5 V dc 2 / +5 V dc 3 / Ground Are the voltage values approximately correct?	Problem resolved.	Replace the controller board. See **"Controller board removal" on page 4-16**.

Scanner / Copy / Fax service checks

840.xx service check

Step	Questions / actions	Yes	No
1	POR the machine into configuration mode. Go to the disable scanner menu item. See **"Disable Scanner" on page 3-36**. Select "Enable ADF/FB -Enabled and press ☑ to save the change. POR the MFP to operating mode. Try running a copy from the ADF and flatbed. Did the 840.xx error recur?	Go to step 2.	Stop. Problem resolved.
2	Re-enter Configuration mode, scroll to and select the Disable Scanner menu item. Does the screen display **ADF Disabled** or **Auto Disabled**?	Go to step 3.	Go to step 8.
3	Check the ADF cable connections on the ADF relay card and the controller board. Also inspect JFBM1, JHS1 and JCCD1 on the controller board. Are the connections properly connected?	Go to step 5.	Go to step 4.
4	Properly connect the connections on the ADF relay card and controller board. POR the machine into configuration mode. Go to the disable scanner menu item. See **"Disable Scanner" on page 3-36**. Select "Enable ADF/FB -Enabled and press ☑ to save the change. POR the MFP to operating mode. Try running a copy from the ADF and flatbed. Did the 840.xx error recur?	Go to step 5.	Stop. Problem solved.
5	Check the continuity on the ADF cable. Is there continuity?	Go to step 7	Go to step 6.
6	Replace the ADF cable. POR the machine into configuration mode. Go to the disable scanner menu item. See **"Disable Scanner" on page 3-36**. Select "Enable ADF/FB -Enabled and press ☑ to save the change. POR the MFP to operating mode. Try running a copy from the ADF and flatbed. Did the 840.xx error recur?	Go to step 7.	Stop. Problem solved.

Step	Questions / actions	Yes	No
7	Replace the ADF unit. See **"Duplex ADF removal" on page 4-63**or **"Simplex ADF removal" on page 4-64**. POR the machine into configuration mode. Go to the disable scanner menu item. See **"Disable Scanner" on page 3-36**. Select "Enable ADF/FB -Enabled and press ☑ to save the change. POR the MFP to operating mode. Run a copy from the ADF. Did the 840.xx error recur?	Go to step 8.	Stop. Problem solved.
8	Inspect JFBM1, JHS1 and JCCD1 on the controller board. Are the connections properly connected?	Go to step 10.	Go to step 9.
9	Properly connect all the connections. Did the 840.xx error recur?	Stop Problem solved.	Go to step 10.
10	Replace the flatbed unit. See **"Flatbed removal" on page 4-53**. POR the machine into configuration mode. Go to the disable scanner menu item. See **"Disable Scanner" on page 3-36**. Select "Enable ADF/FB -Enabled and press ☑ to save the change. POR the MFP to operating mode. Run a copy from the flatbed. Did the 840.xx error recur?	Go to step 11	Stop. Problem solved.
11	Replace the controller board. See **"Controller board removal" on page 4-16**. Did this fix the problem?	Problem solved.	Contact second-level support.

Black or blank page copy service check

Step	Questions / actions	Yes	No
1	Print a menu page, or a page from the host. Is the page black?	See **"Print quality—solid color page" on page 2-58**	Go to step 2.
2	Is the copy an ADF scan?	Go to step 3.	Go to step 4.
3	Run a flat bed copy. Is it blank or black?	Go to step 5	Go to step 4
4	Did the sheet feed into the ADF?		Go to step 5.
5	Is the CCD ribbon cable properly connected to JCCD1 on the controller board?	Go to step 6.	Properly connect the ribbon cable to JCCD1.
6	Check for +14VDC on Pin 33 and 34 on connector JCCD1. Pin 31 and 32 are +5VDC. Are the voltages present?	Replace the flatbed unit. See **"Flatbed assembly removal" on page 4-50**.	Replace the system board. See **"Controller board removal" on page 4-16**.

CCD service check

Step	Questions / actions	Yes	No
1	Restart the device, and retry the scan / copy job. Repeat this step with a few copy jobs. Does the error return?	Go to step 2.	No issue.
2	Is the CCD ribbon cable properly connected to JCCD1 on the controller board?	Go to step 3.	Properly connect the ribbon cable to JCCD1.
3	Replace the flatbed unit. See **"Flatbed removal" on page 4-53**. Did this resolve the issue?	Problem resolved.	Replace the system board. See **"Controller board removal" on page 4-16**.

Flatbed motor service check

Step	Questions / actions	Yes	No
1	Ensure that the flatbed motor cable (JFB1) is connected. Is the cable connected?	Go to step 2.	Properly connect the cable.
2	Check pin 1 in JFBM1 for voltage. The voltage is only present when a flatbed copy job is running. The voltage should measure +24V AC. Is voltage present?	Replace the flatbed unit. See **"Flatbed removal" on page 4-53**.	Replace the controller board. Go to **"Controller board removal" on page 4-16**.

Flatbed home position service check

Step	Questions / actions	Yes	No
1	POR the MFP. Does the CCD move and return to the home position?	Problem solved.	Go to step 2.
2	Perform the home position sensor test. Go to **"Scanner Tests" on page 3-25**. Is the sensor working properly?	Go to step 3.	Go to step 5.
3	Check JFBM1 on the controller for proper connection. Is it connected properly?	Go to step 4.	Properly connect the cable.
4	Check pin 1 in JFBM1 for voltage. The voltage is only present when a flatbed copy job is running. The voltage should measure +24V AC. Is voltage present?	Go to step 5.	Replace the controller board. Go to **"Controller board removal" on page 4-16**
5	Ensure that the home position cable (JHS1) is connected. Is the cable connected?	Go to step 6.	Properly connect the cable.
6	Check pin 1 in JHS1 for voltage. The voltage should measure +5V DC. Pin 2 should be GND. Is voltage present and is it correct?	Replace the flatbed unit. See **"Flatbed assembly removal" on page 4-50**.	Replace the controller board. Go to **"Controller board removal" on page 4-16**.

ADF cover open service check

Step	Questions / actions	Yes	No
1	Is the ADF cover properly closed	Go to step 3.	Go to step 2.
2	Close the ADF cover. Does the problem go away?	Issue resolved	Go to step 3.
3	Perform the ADF cover open sensor test. Go to **"Scanner Tests" on page 3-25**. Does the sensor work properly.	Go to step 4	Go to step 8.
4	On the bottom of the ADF cover, inspect the ADF cover closed sensor actuator. Does it move freely?	Go to step 6.	Go to step 5.
5	Fix the actuator so it moves freely. Does this fix the problem?	Issue resolved.	Go to step 6.
6	Remove the ADF rear cover and inspect the ADF cover closed sensor for dirt and debris. Is there dirt and debris present?	Go to step 7.	Go to step 8.
7	Clean the dirt and debris from the sensor. Does this fix the issue?	Issue resolved.	Go to step 8.
8	Inspect the connections on the ADF relay card in the ADF. Are all the connections properly connected?	Go to step 9.	Secure all the connections.
9	Check the ADF cable for continuity. Is there continuity?	Go to step 10.	Replace the ADF cable.Go to **"ADF cable" on page 4-65**
10	Check for signals or voltages from JADF1 on the controller board. Pin 11 and 12 should measure +24VDC. Pin 5 should measure +14VDC. Are there signals or voltages present?	Replace the ADF.Go to **"Duplex ADF removal" on page 4-63**, or **"Simplex ADF removal" on page 4-64**	Replace the controller board. Go to **"Controller board removal" on page 4-16**.

ADF streak service check

Step	Questions / actions	Yes	No
1	Do streaks appear on the middle of scans when using the ADF?	Clean the ADF glass on the flatbed using a lint-free cloth. Also, clean the separator roll and pad with a damp cloth.	No issue to fix.

ADF paper jam service check

Note: This service check should be used if the paper feeds and jams in the ADF. If the paper is not feeding into the ADF see **"ADF feed errors service check" on page 2-69**.

Step	Questions / actions	Yes	No
1	If the ADF is multi-feeding, check for dirt on the ADF separator pad and ADF separator rollers. Are they dirty?	Clean them with a lint free cloth and isopropyl alcohol.	Replace the separator pad and ADF pick roll.
2	If the paper is skewing when it is fed into the ADF, check the paper guide width. Is it set correctly?	Go to step 3.	Set the paper guides so they contact the edges of the paper.
3	If paper is skewing when fed or jamming check to see if the top cover is open or ajar. Is the ADF top cover open or ajar?	Properly close the top cover.	If the paper is jamming in the ADF, go to step 6
4	Is paper failing to feed into the ADF?	Go to step 5.	There is no issue.
	Perform the ADF paper present, scan 1st and scan 2nd sensor tests. Go to **"Scanner Tests" on page 3-25**. Are the sensors working properly.	Go to step 6	Go to step 9.
6	Check the leading edge of the paper to ensure the paper is not curled or bent in a way that would keep it from contacting the paper present sensor actuator. Is the paper damaged?	Bad media.	Go to step 7.
7	Is there dirt in the sensors, or is the paper present actuator stuck?	Clean the sensors, or remove debris from the actuators.	Go to step 8.
8	Are the sensor actuators on the ADF mechanism cover damaged?	Replace the ADF.	Go to step 9.
9	Is the ADF connector properly connected to JADF1 on the system board?	Go to step 10.	Properly connect the cable to the system board.
10	Inspect the connections on the ADF relay card in the ADF. Are all the connections properly connected?	Go to step 11.	Secure all the connections.
11	Check the ADF cable for continuity. Is there continuity?	Go to step 11.	Replace the ADF cable.
11	Check for signals or voltages from JADF1 on the controller board. Pin 11 and 12 should measure +24VDC. Pin 5 should measure +14VDC. Are there signals or voltages present?	Replace the ADF unit. See **"ADF unit removal" on page 4-54**.	Replace the controller board. Go to **"Controller board removal" on page 4-16**.

ADF feed errors service check

Step	Questions / actions	Yes	No
1	If the ADF is multi-feeding, check for dirt on the ADF separator pad and ADF separator rollers. Are they dirty?	Clean them with a lint free cloth and isopropyl alcohol.	Replace the separator pad and ADF pick roll.
2	If the paper is skewing when it is fed into the ADF, check the paper guide width. Is it set correctly?	Go to step 3.	Set the paper guides so they contact the edges of the paper.
3	If paper is skewing when fed or jamming check to see if the top cover is open or ajar. Is the ADF top cover open or ajar?	Properly close the top cover.	If the paper is jamming in the ADF, See **“ADF paper jam service check” on page 2-68**
4	Is paper failing to feed into the ADF?	Go to step 5.	There is no issue.
5	Is the leading edge of the paper wrinkled or torn?	Use different media.	Go to step 6
6	Perform the ADF paper present sensor test. Go to **“Scanner Tests” on page 3-25**. Is the sensor working properly?	Go to step 7.	Properly connect all the connections in the ADF relay card.
7	Check the actuators to see if they are jammed, or damaged. Are they jammed or damaged?	Replace the ADF. Go to**“Duplex ADF removal” on page 4-63**, or **“Simplex ADF removal” on page 4-64**	Go to step 8.
8	Properly connect all the connections in the ADF relay card and controller board. Did this fix the situation?	Problem resolved	Go to step 9.
9	Check the ADF cable for continuity.	Go to step 6.	Replace the ADF cable. Go to **“ADF cable” on page 4-65**
10	Replace the ADF Go to **“Duplex ADF removal” on page 4-63**, or **“Simplex ADF removal” on page 4-64**. Does this fix the situation?	Problem solved	Replace the controller board. Go to **“Controller board removal” on page 4-16**

ADF Duplex service check

Step	Questions / actions	Yes	No
1	Perform sensor 1, and sensor 2 sensor tests. Go to **“Scanner Tests” on page 3-25**. Are the sensors working properly?	Go to step 2.	Go to step 3.
2	Check the ADF sensor actuators to see if they are dirty or jamming. Are the actuators ok?	Go to step 3.	Clean the actuators. If any actuators on the ADF are broken, replace the ADF unit. Go to **“Duplex ADF removal” on page 4-63**

3	Check all the connections on the ADF relay card. Are they properly connected?	Go to step 4	Properly connect all the connections.
4	Check the ADF cable to ensure it is properly connected to CN 15 on the ADF relay card, and main controller board at JADF1. Is the ADF cable properly connected?	Go to step 5.	Properly connect the ADF cable to its connections.
5	Check the ADF cable for continuity. Make sure pin22 has continuity. Is there continuity on pin 22?	Go to step 6.	Replace the ADF cable.Go to **“ADF cable” on page 4-65**
6	Replace the ADF. Go to **“Duplex ADF removal” on page 4-63**. Does this fix the situation?	Problem solved	Replace the controller board. Go to **“Controller board removal” on page 4-16**.

Modem / fax card service check

Step	Questions / actions	Yes	No
1	Is the phone line properly connected to the modem card and the wall jack?	Go to step 2.	Go to step 3.
2	Properly connect the phone line to the modem card and wall jack. Did this fix the problem?	Problem resolved.	Go to step 3.
3	Test the phone line’s ability to send and receive calls. Did the phone line work properly?	Go to step 5.	Go to step 4.
4	Use the MFP on a properly functioning phone jack. Did this fix the problem?	Problem resolved.	Go to step 5.
5	Is the modem card ribbon cable properly connected to the system board at JMOD2 and the modem card?	Go to step 7.	Go to step 6.
6	Properly connect the modem card cable to the modem card and system board. Did this fix the problem?	Problem resolved.	Go to step 7.
7	Check the modem card ribbon cable for continuity. Is there continuity?	Go to step 8.	Replace the modem card cable.
8	Check the voltages from connector JMOD2 on the controller board. Check Pin 4 and 5 for +3.3VDC. Pin 7 for +5VDC. 9, 11, 13, 15, 17, and 19 are grounds. Are the signals or voltages present?	Replace the modem card. See **“Modem card removal” on page 4-46**.	Replace the system board. See **“System board removal” on page 4-36**.

Fax transmission service check

Note: Before performing this service check, verify that the correct country code for the MFP is selected. This setting must match the country in which the MFP is used to transmit and receive faxes. If the setting is wrong, the modem settings can be changed in the Fax/SE menu. See step 14. These settings should only be performed with guidance from your second-level support.

Step	Questions / actions	Yes	No
1	Is the phone line properly connected to the modem card and the wall jack?	Go to step 2.	Go to step 3.
2	Properly connect the phone line to the modem card and wall jack. Did this fix the problem?	Problem resolved	Go to step 3.
3	Test the phone line's ability to send and receive calls. Did the phone line work properly?	Go to step 5.	Go to step 4.
4	Use the MFP on a properly functioning phone jack. Did this fix the problem?	Problem resolved.	Go to step 5.
5	Is the phone line being used by the MFP an analog line?	Go to step 8.	Go to step 6.
6	Is the line being used a VOIP line?	Go to step 7.	Go to step 8.
7	Have the system administrator verify that the VOIP server is configured to receive faxes. Is the server properly configured?	Go to step 8.	Stop here. The issue is VOIP related. The VOIP provider needs to change the server configuration.
8	Is the MFP on a PABX?	Go to step 9.	Go to step 10.
9	Enable **Behind a PABX** under fax settings in the Administration menu. Did this fix the issue?	Problem fixed.	Disable **Behind a PABX,** and go to step10.
10	Is a dial prefix needed to get an outside line?	Go to step 11.	Go to step 12.
11	Try sending a fax using a dial prefix. Did the fax transmit?	Problem fixed.	Go to step 12.
12	Is the fax failing to send to one specific destination?	Go to step 13.	Go to step 14.
13	Check the device that cannot receive a fax. Can it send a fax?	Go to step 14.	Stop here. The issue is with the other device.
14	press **411 to enter the Fax/SE Menu. Select "Print Logs". Print the T30 transmission log. Check the error being reported with the fax error code table. See **"Fax error log codes" on page 2-28**. Perform the suggested resolution for the error. Did this fix the problem?	Problem resolved.	Go to step 15.

Step	Questions / actions	Yes	No
15	Adjust the “Transmit Level” setting in the SE menu. press **411 to enter the SE menu, enter Modem settings, and select “Transmit Level”. Test by adjusting the transmitted signal strength by decreasing/increasing the ‘Transmit Level’ setting in steps of 1db. For example, if default value is -11 db, changing it to-12db will decrease the signal strength by 1db, and changing it to -10db will increase the signal strength by 1db. Recommended adjustment range is ±5 db (in 1db steps) from the default value. Did this fix the problem?	Stop. Problem resolved.	Go to your second-level of support. See **“Escalating a fax issue to second-level support” on page 2-75**.

Fax reception service check

Step	Questions / actions	Yes	No
1	Is the phone line properly connected to the modem card and the wall jack?	Go to step 2.	Go to step 3.
2	Properly connect the phone line to the modem card and wall jack. Did this fix the problem?	Problem resolved.	Go to step 3.
3	Check for a dial tone. Is there a dial tone?	Go to step 4.	Go to step 6.
4	Use a telephone to test the phone line's ability to send and receive calls. Did the phone line work properly?	Go to 7.	Go to step 5.
5	Use a telephone handset to verify the phone line is free of static or external noise. Is the phone line noise-free?	Go to step 7.	Go to step 6.
6	Use the MFP on a properly functioning phone jack. Did this fix the problem?	Problem resolved.	Go to step 7.
7	In <diags / config menu>, verify that the Enable Fax Receive setting is on. Is the setting set to on?	Go to step 9.	Go to step 8.
8	Set "Enable Fax Receive" to On. Did this fix the problem?	Problem resolved.	Go to step 9.
9	Is Distinctive Ring enabled?	Go to step 11.	Go to step 10.
10	Turn on Distinctive ring. Did this fix the problem?	Problem resolved.	Go to step 11.
11	Is the phone line analog?	Go to step 13.	Go to step 12.
12	IS the VOIP server configured to support fax?	Go to step13.	Stop here. This is an issue with the VOIP provider.
13	Does the MFP have reception issues with only a certain remote device?	Go to step 14.	Go to step 15.
14	Verify communications with a different remote device. Can the other device receive faxes?	The issue is with the other device.	Go to step 15.
15	Go to the Administrator menu. Enter the Fax settings - Analog Fax Settings submenu. Verify the Block No Name Fax user setting. Is it enabled?	Go to step 16.	Go to step 17.
16	Disable Block No Name Fax user setting. Did this fix the issue?	Problem resolved.	Go to step 17.

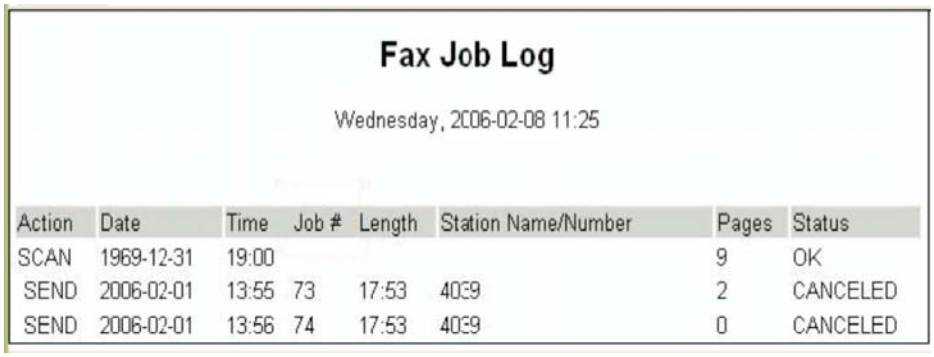
Step	Questions / actions	Yes	No
17	Go to the Administrator menu. Enter the Fax settings - Analog Fax Settings submenu. Verify the remote device number is not in the Banned Fax List user setting. Is the remote device number in the banned fax list?	Go to step18	Go to step 19.
18	Remove the remote number from the banned fax list. Did this fix the problem?	Problem resolved.	Go to step 19.
19	Adjust the “Receive Threshold” setting in the SE menu. press **411 to enter the SE menu, enter Modem settings, and select “Receive Threshold”. Test by adjusting the received signal level by decreasing/increasing the”Receive Threshold” setting in steps of 2db. For example, if default value is -43 db, changing it to -45db will decrease the received signal level by 2db, and changing it to -41db will increase the received signal level by 2db. Recommended adjustment range is between -33db and -48db (in 2db steps). Did this fix the problem?	Problem resolved	Go to step 20.
20	press **411 to enter the SE Menu. Select “Print Logs”. Print the T30 transmission/ job log. Check the error code being reported. See **“Fax error log codes” on page 2-28**. Perform the suggested resolution for the error. Did this fix the problem?	Problem resolved.	Contact your second-level of support. See **“Escalating a fax issue to second-level support” on page 2-75**.

Escalating a fax issue to second-level support

Before contacting the second-level support, go to the SE menu on the MFP.and generate a Fax error file. This file contains machine settings information and debug information that will help second-level support determine the cause of a failure.

To generate the fax error file, perform the following steps:

1. In a Web browser, type http://MFP ip address/se.
2. The MFP's SE menu page will display. Click the "Dump Job History" link. The following displays:

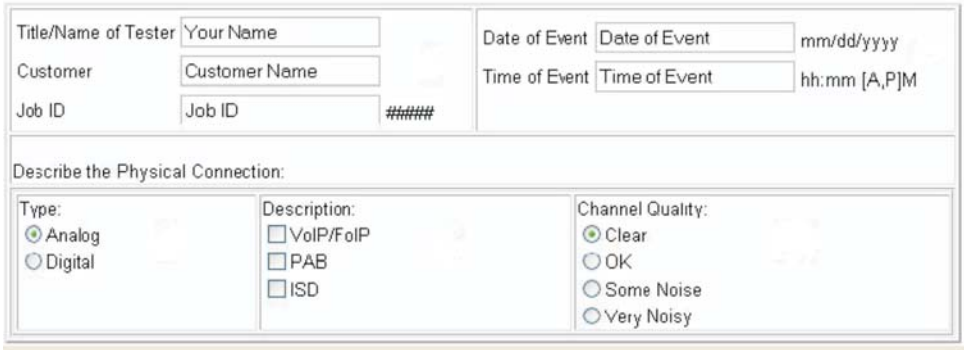


Fax Job Log

Wednesday, 2006-02-08 11:25

Action	Date	Time	Job #	Length	Station Name/Number	Pages	Status
SCAN	1969-12-31	19:00				9	OK
SEND	2006-02-01	13:55	73	17:53	4039	2	CANCELED
SEND	2006-02-01	13:56	74	17:53	4039	0	CANCELED

3. Write down the type of connection, the type of error, and the job in which the error occurred.
4. In the Web browser address bar, type http://MFP ipaddress/se.
5. Click **Report a Fax Problem** (A). The fax check list displays.
6. Fill in the requested information. This is where you will type in the information you retrieved in step 3. Second-level support can assist you if you have questions about the information requested on the page.



Title/Name of Tester: Your Name
Customer: Customer Name
Job ID: Job ID #####
Date of Event: Date of Event mm/dd/yyyy
Time of Event: Time of Event hh:mm [A,P]M

Describe the Physical Connection:

Type: (•) Analog ( ) Digital
Description: [ ] VoIP/FoIP [ ] PAB [ ] ISD
Channel Quality: (•) Clear ( ) OK ( ) Some Noise ( ) Very Noisy

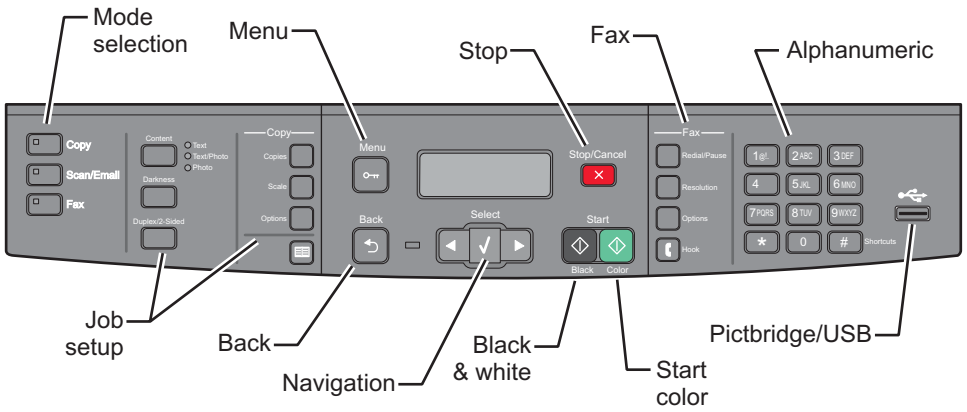
Note: The fields requesting the code levels, model number, type of problem are auto-filled. If the information is not in the fields, it can be retrieved from the SE menu. The SE menu can be accessed by pressing **411 on the keypad or typing http://MFP ipaddress/se in a Web browser.

7. After all the requested information is entered into the Fax Checklist Web page, press the **Submit** button on the bottom of the page. A dialogue asking you to save the file will appear.
   Note: The file generated by the MFP is not automatically transmitted to second-level support. It is placed on the computer desktop.
8. Enter a name for the file, and indicate where you want to save the file.
9. press **OK**. The file appears on the desktop.
10. E-mail the file to second-level support.

User operator panel, menus and messages

Understanding the operator panel

The printer operator panel has a four-line, back lit, grayscale display that can show both graphics and text. The Mode selection, job setup, Back, and Menu buttons are located to the left of the display, the navigation buttons are located below the display, and the start buttons, stop button, and numeric pad are located to the right of the display. In addition, there is a USB jack that enables printing of certain graphics formats as well as enabling Pict Bridge functionality.



Operator panel buttons

Button or indicator	Function
Select	press **Select** (✓) to initiate action on a menu item.
Navigation buttons	press ◀ or ▶ to scroll through menu lists.
Indicator light	Indicates the printer status:
Back	Returns the display to the previous screen.
Menu	Opens the menu index.
Start / Color	press to start a job in color.

Status	Indicates
Off	The power is off.
Blinking green	The printer is warming up, processing data, or printing a job.
Solid green	The printer is on, but idle.
Solid red	Operator intervention is needed.

Button or indicator	Function
Start / Black and White	press to start a job in black and white.
Stop/Cancel	Stops all printer activity. A list of options is offered once Stopped appears on the display.
Operating modes	
Copy	Selecting this option enables copy mode.
Scan / E-mail	Selecting this enables scan and scan to E-mail mode.
Fax	Selecting this option puts the MFP into fax mode. Fax models only.
USB Direct interface	**Note:** The USB connector is available on some models.
Copy mode setup	
Content	This setting is used to enhance output quality. Choose from Text, Text/Photo, or Photo. The current content setting is displayed by the LEDs to the right.
Darkness	This adjusts the darkness level of the output.
Duplex	press this to output a copy job with printing on both sides of the output sheet.
Address book	press this key to enter the address book.
Fax mode setup	
Redial / Pause	• press this to initiate a two or three second pause in a fax number. In the fax to field, a pause is represented by a comma. • From the home screen press the key to redial a fax. • This key only works in the fax menu, or fax function. When the MFP is in another mode, pressing this key will generate a beep.
Resolution	press to change the fax resolution.
Options	press options to change the size, broadcast, delayed send, and cancel options for a fax job.
Hook	press this to take the line off the hook. press a second time to hang up.
Keypad	Enter numbers, letters and symbols.
Shortcuts	press to enter the shortcut screen.

Menu map

This menu map identifies menus available to customers. The diagram shows the menus on the operator panel and items available under each menu.

Some menu items or values are displayed only if a specific option or feature is installed on your printer. Other menu items may be effective only for a particular printer language. You can select these values at any time, but they affect printer function only when you have the optional equipment, feature on your model, or the specified printer language.

Supplies Menu
- Cyan Cartridge
- Magenta Cartridge
- Yellow Cartridge
- Black Cartridge
- Imaging Kit
- Waste Toner Bottle

Paper Menu
- Default Source
- Size/Type
- Paper Texture
- Paper Weight
- Paper Loading
- Custom Types
- Custom Scan Sizes
- Universal Setup
  - Units of Measure
  - Portrait Width
  - Portrait Height
  - Feed Direction

Reports
- Menu Settings Page
- Device Statistics
- Network Setup Page
- Shortcut List
- Fax Job Log
- Fax Call Log
- E-mail Shortcuts
- Fax Shortcuts
- Profiles List
- Print Fonts
- Print Directory
- Print Defects
- Print Demo
  - Demo Page
  - PPDS Info
- Asset Report

Network/Ports
- Active NIC
- Network Menu
  - PCL Smartswitch
  - PS Smartswitch
  - NPA Mode
  - Network Buffer
  - Mac Binary PS
  - Network Setup
- Wireless Menu
- USB Menu
  - PCL Smartswitch
  - PS Smartswitch
  - NPA Mode
  - USB Buffer
  - Mac Binary PS
  - USB With ENA
    - ENA Address
    - ENA Netmask
    - ENA Gateway
    - ENA Gateway

Settings
- General Settings
- Copy Settings
- Fax Settings
- Flash Drive Settings
- Print Settings
- Set Date/Time

3. Diagnostic aids

This chapter explains the tests and procedures to identify printer failures and verify repairs have corrected the problem.

There are different test menus that can be accessed during POR to identify problems with the printer.

Configuration Menu	1. Turn off printer. 2. press and hold ☑ and ▶ . 3. Turn on the printer. 4. Release the buttons when Performing Self Test displays.	The Configuration Menu group contains a set of menus, settings, and operations which are infrequently required by a user. Generally, the options made available in this menu group are used to configure a printer for operation. Go to **“Configuration Menu” on page 3-31** for more information.
Diagnostics Mode	1. Turn off printer. 2. press and hold ☑ and ◀ . 3. Turn on the printer. 4. Release the buttons when Performing Self Test displays.	The Diagnostics Mode group contains the settings and operations used while manufacturing and servicing the printer. Go to **“Diagnostics Menu (Diag Menu)” on page 3-2** for more information.

These menus do not require a POR to access them:.

Network SE Menu	1. Enter Customer Network/Ports menu. 2. press and hold **Left** (◀) and **Right** (▶). 3. Release the buttons when the menu appears.	This menu contains settings for fine tuning the communication settings for the network interfaces and protocols.
FAX SE Menu	1. Enter **411 while in the Home Prime screen	This should be used only under the guidance of second-level support. See **“Fax transmission service check” on page 2-71** and**“Fax reception service check” on page 2-73**.
SE Menu	1. From a web browser on a host PC, add **/se** to the printer IP address.	
Invalid Engine Code Mode	1. Turn off the MFP. 2. press and hold **Back** (⮌) and **Left** ◀ .	This mode is used if the machine has invalid code and needs the correct code loaded. After entering this mode, the firmware code can be updated.
Additional error message information	While error displays on panel, press **Back** (⮌) and **Right** (▶).	Access secondary debug information.

Diagnostics Menu (Diag Menu)

Note: Tray 2 refers to the 650-sheet tray located in the 650-sheet Duo Drawer assembly.

Diagnostics menu structure

When the Diagnostics mode is entered, each Diagnostics main menu item displays on the operator panel. When a diagnostic test is selected from the main menu, a sub menu displays, and each individual test displays in the order shown. Any options that are referred to in the menus are displayed when the option is installed.

Available tests

The tests display on the operator panel in the order shown:

Diagnostics mode tests

REGISTRATION	
Printer	
Top Margin	These tests are performed to adjust the print head registration.See **“Available tests” on page 3-2**.
Bottom Margin	
Left Margin	
Right Margin	
Skew	
Quick Test	
ALIGNMENT Menu (color alignment	
Cyan	These testes are performed to align the color planes. See**“Alignment” on page 3-7**.
Yellow	
Magenta	
Factory Scanner	A summary page for all the color alignment settings. Can be used in place of alignment pages for each individual color.
Factory Manual	
MISC TESTS	
Motor Detect	See **“Motor Detect” on page 3-10**.
PRINT TESTS	
Tray 1	See **“Print Tests” on page 3-11**.
Tray 2 (if installed)	
Manual Feeder (if installed)	
MP Feeder (if installed)	
Prt Quality Pgs	See **“Print quality test pages (Prt Quality Pgs)” on page 3-11**.
HARDWARE TESTS	
Panel Test	See **“Panel Test” on page 3-13**.
Button Test	
DRAM Test	See **“DRAM Test” on page 3-13**.
DUPLEX TESTS (if installed)	
Quick Test	See **“Quick Test (duplex)” on page 3-15** .
Left Margin	See **“Left Margin (duplex)” on page 3-15**.
Top Margin	See **“Top Margin (duplex)” on page 3-16**.

Diagnostics mode tests (continued)

INPUT TRAY TESTS (if Tray 2 is installed)	
Feed Tests	See **"Feed Tests" on page 3-17**.
Sensor Tests	See **"Sensor Test" on page 3-17**.
BASE SENSOR TEST	See **"Base Sensor Test" on page 3-18**.
Front Door	
Input S1	
Input S2	
Fuser Exit	
Standard Bin	
C TMC Sensor	
M TMC Sensor	
Y TMC Sensor	
K TMC Sensor	
DEVICE TESTS	See **"Device Tests" on page 3-18**.
Flash Test	
PRINTER SETUP	
Defaults	See **"Defaults" on page 3-19**.
Prt Color Page Count	See **"Page Counts" on page 3-19**.
Prt Mono Page Cnt	
Perm Page Count	
Serial Number	See **"Serial Number" on page 3-19**.
Engine Setting 1 through 4	
Model Name	See **"Model Name" on page 3-19**
Configuration ID	See **"Configuration ID" on page 3-19**
ITU Barcode	
Enable Edge to Edge Copy	See **"Enable Edge to Edge Copy" on page 3-20**
Reset Fuser Cnt	
EP SETUP	
EP Defaults	See **"EP Defaults" on page 3-21**.
Fuser Temp	See **"Fuser Temp" on page 3-21**.
DC Charge Adjust	See **"DC Charge Adjust, Deve Bias Adj, Transfer Adj" on page 3-21**.
Dev Bias Adj	See **"DC Charge Adjust, Deve Bias Adj, Transfer Adj" on page 3-21**.
Transfer Adjust	See **"DC Charge Adjust, Deve Bias Adj, Transfer Adj" on page 3-21**.
TPS SETUP	
Right	See **"Right or Left TPS" on page 3-21**.
Left	
Reset Color Cal	
Cal Ref Adj	See **"Cal Ref Adj" on page 3-22**.
REPORTS	
Main Settings Page	See **"Main Settings Page" on page 3-22**.
EVENT LOG	
Display Log	See **"Display Log" on page 3-23**.

Diagnostics mode tests (continued)

Print Log	See **“Print Log” on page 3-23**.
Clear Log	See **“Clear Log” on page 3-24**.
Development Menu	Do not use. For development use only.
Scanner Tests	
ASIC Test	See **“ASIC Test” on page 3-25**.
Feed test	See **“Feed Test” on page 3-25**.
Sensor Test	See **“Sensor Test” on page 3-25**.
EXIT DIAGNOSTICS	This selection exits Diagnostics mode, and Resetting the Printer displays. The printer performs a POR and returns to normal mode.

Registration

Printer

Print registration makes sure the black printing is properly aligned on the page. This is one of the steps in aligning a new printhead. See**“Alignment” on page 3-7**. It is also the first step in aligning the duplex registration. See **“Quick Test (duplex)” on page 3-15**.

To set print registration:

1. Select **REGISTRATION** from the DIAGNOSTICS menu.
2. Use ◀ or ▶ to select Quick Test, and press ☑. See **“Quick test” on page 3-6**.
   The message Quick Test Printing… appears on the display, and the page prints.
   Retain this page to determine the changes you need to make to the margin settings.
3. Use ◀ or ▶ to select the margin setting you need to change, and press ☑.
4. Use ◀ to decrease or ▶ to increase the offset values, and press ☑ to confirm the value.
   The message Submitting changes displays, and the original margin setting screen appears.
   The print registration ranges are:

Description	Value	Direction of change
Top margin	-50 to +50 Each increment corresponds to 8 scans at a 600 dpi scan rate (0.0133 inches or 0.339 mm). The default is 0.	A positive change moves the image down the page and increases the top margin. A negative change moves the image up and decreases the top margin. No compression or expansion occurs.
Bottom margin	-25 to +25 Each increment causes approximately 0.55 mm shift in the bottom margin. The default is 0.	A positive offset moves text down the page and narrows the bottom margin, while a negative offset moves text up the page and narrows the bottom margin. The image is compressed or expanded.
Left margin	-50 to +50 Each increment corresponds to 4 pixels at 600 dpi (0.00666 in. or 0.1693 mm). The default is 0.	A positive change moves the image to the left, and a negative change moves the image to the right. No compression or expansion occurs.

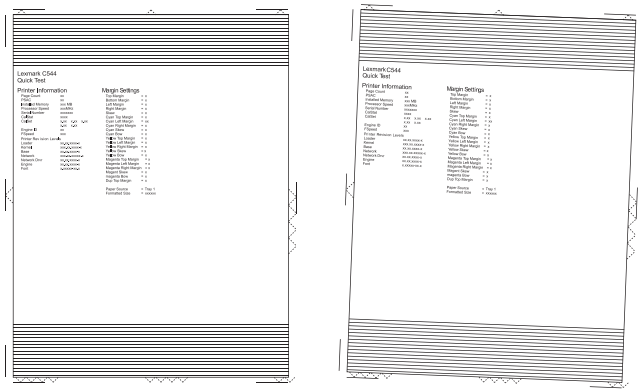
Description	Value	Direction of change
Right margin	-50 to +50 Each increment corresponds to an approximate shift of 4 pixels at 600 dpi. The default is 0.	A positive change moves the image to the left, and a negative change moves the image to the right.
Skew	-100 to +100.Each increment corresponds to 1/1200 of an inch. The default is 0.	A positive value causes the left end of the scan line to move down the page. A negative value causes the left end of the scan line to move up the page. The right end stays fixed. There is no compression or expansion of the image.

5. Print another copy of the Quick Test to verify your changes.
6. Continue changing the settings by repeating steps 3 through 5.

To exit REGISTRATION, press **Back** (⮌).

Skew

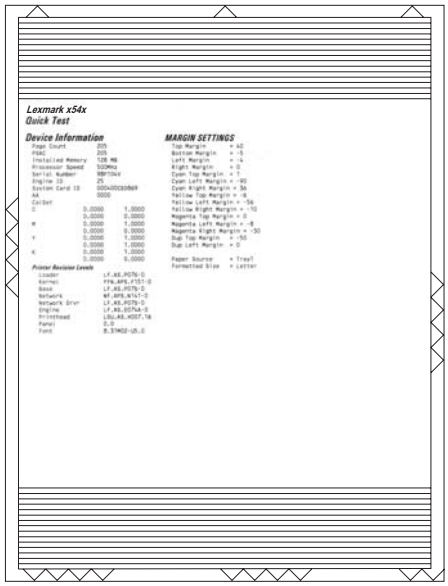
One printhead houses the four color planes. The black plane is aligned to the printer, and the other color planes are internally aligned to black. Electronic alignment fine tunes the alignment of the color planes to the black plane once the printhead is installed. See **“Alignment” on page 3-7** for instructions on setting printhead alignment. This must be performed before color skew adjustment is attempted. The following illustration shows proper alignment versus skewed alignment.



Quick test

The Quick Test contains the following information:

- Print registration settings
- Alignment diamonds at the left, right, top. and bottom
- Horizontal lines to check for skew
- General printer information, including current page count, installed memory, serial number, and code level.



To print the Quick Test page:

Note: Print the Quick Test Page on letter or A4 paper.

1. Select **REGISTRATION** from DIAGNOSTICS.
2. Use ◀ or ▶ to select Quick Test, and press ☑.

   The message Quick Test Printing… appears on the display.

Once the Quick Test Page completes printing, the Registration screen displays again.

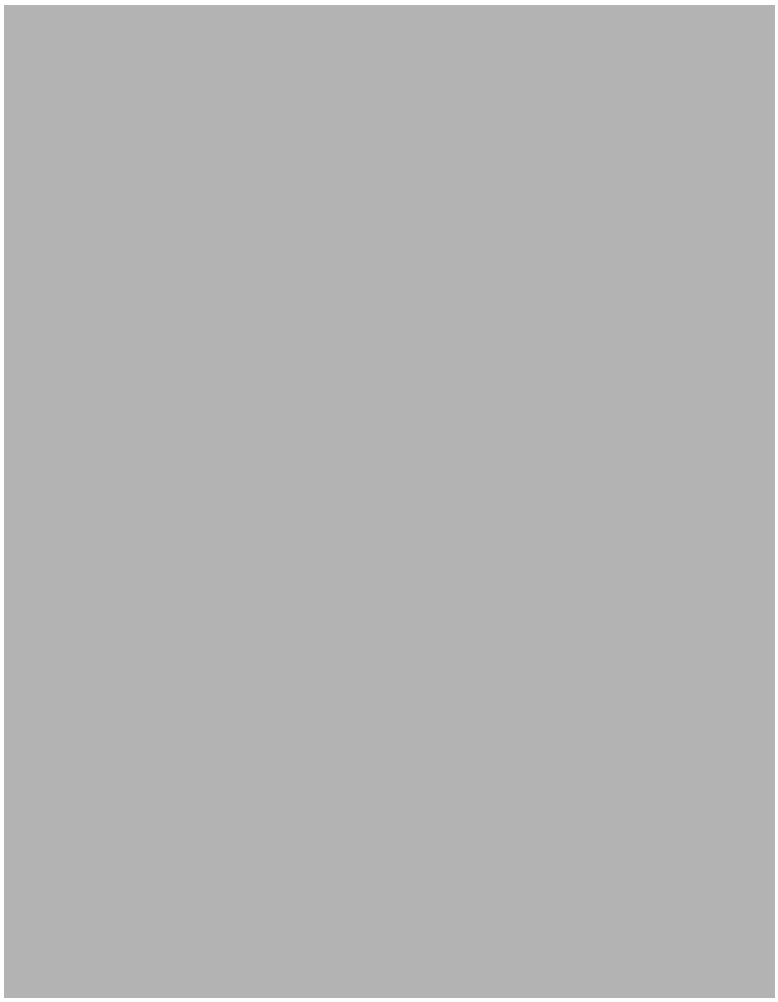
Alignment

Aligns each of the color planes to the black plane. Print the Quick Test under each color, Cyan, Yellow, and Magenta, and adjust the Top Margin, Left Margin, Right Margin, Skew, and Bow.

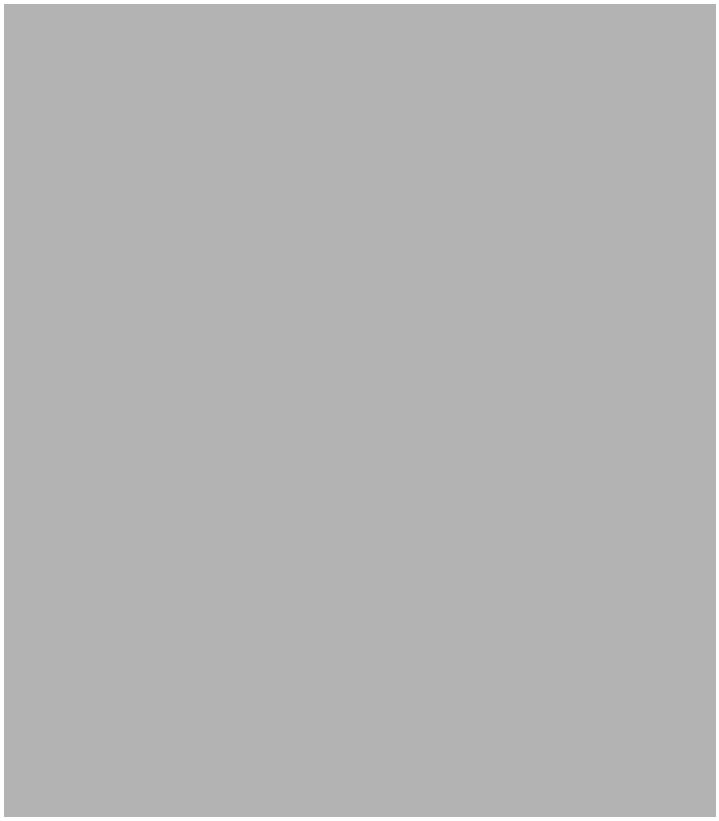
Prints the Print Alignment Pages and requires that the best line in each set of lines must be selected.

To get started:

1. Select **Alignment Menu** from the Diag Menu, and press **Select** (☑).
2. Select a color (**Cyan**, **Yellow**, or **Magenta**), and press **Select** (☑).
   Note: The yellow alignment page markings are more difficult to see, so you might not want to pick it first.
3. Select the **Quick Test**, and press **Select** (☑) to begin printing.
   The message Printing… appears on the display. A page similar to the following prints:



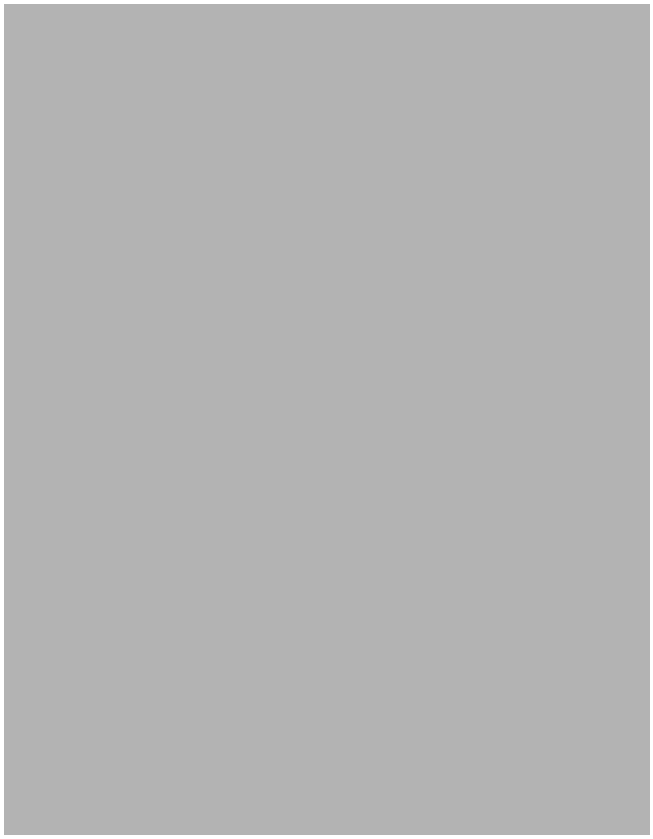
4. Select **Top Margin**, and press **Select** (☑).
5. Select the best choice for fine or coarse adjustment in Step 1 (first page), and add it to the current value for the Top Margin.



6. Use ◀ or ▶ to enter the sum of the numbers, and press **Select** (☑).
   Submitting changes… appears.
   Print the Quick Test again to verify the observed value is the same as the current value (no change is needed). If change is still needed, repeat the steps 4–6. When the observed values and the current value are the same, continue to the next step.

7. Select the Skew value in the same way, enter the value, press **Select** (☑), and print the Quick Test to see if the observed values and the current values are the same.

8. On the second page of the latest Quick Test you printed, proceed to Step 2; adjust the left, right ,and bow settings. Continue printing the Quick Test after each adjustment to verify your settings.



9. Continue on to the other two colors in the same manner.

Factory Scanner

Note: This setting is not used by field service.

Factory Manual

Note: This setting is not used by field service.

Miscellaneous Tests

Motor Detect

This test initiates an automatic motor detection process that should be performed whenever the controller board is replaced.

To run Motor Detect:

1. Select **MISC TESTS** in the Diag Menu, and press **Select** (☑).
   Remove Cartridge. press Select appears.
2. Select **Motor Detect**.
   Note: Do not press **Select** yet.
3. Remove all toner cartridges and the imaging unit.
4. Close the front cover.
   If you press **Select** before closing the front cover, a message appears: Close Cover. press Select.
5. press **Select** (☑).
   Motor Detection In Progress… appears.
   The motor detection process takes about 10 seconds, and stops automatically.
   Detect Complete. Rebooting… appears, and the printer performs a POR (Power On Reset).

Print Tests

Input source tests

The purpose of the diagnostic PRINT TESTS is to verify that the printer can print on media from each of the installed input options. The contents of the Print Test Page vary depending on the media installed in the selected input source.

Check each Test Page from each source to assist in print quality and paper-feed problems.

To run the Print Test Page:

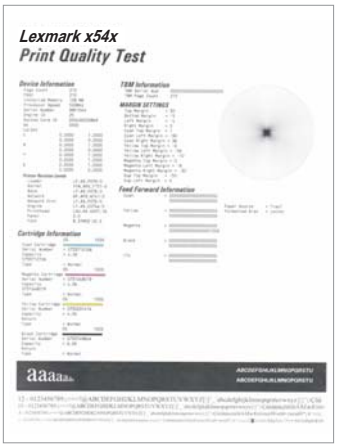
1. Select **PRINT TESTS** from the Diag Menu, and press **Select** (☑).
2. Select the media source (Tray 1, Tray 2, Manual Feeder, or MP Feeder), and press **Select** (☑),
3. Select **Single** or **Continuous**, and press **Select** (☑).
   - If **Single** is selected, a single page is printed.
   - If **Continuous** is selected, printing continues until **Stop** (☒) is pressed to cancel the test.

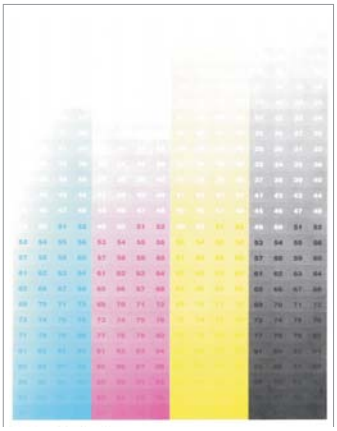
     If a source is selected that contains envelopes, an envelope test pattern is printed. If Continuous is selected, the test pattern is printed only on the first envelope.

   Note: The Print Test Page always prints on one side of the paper, regardless of the duplex setting.
4. press **Back** (⮌) to return to PRINT TESTS.

Print quality test pages (Prt Quality Pgs)

The print quality test consists of five pages. Pages one and two contain a mixture of graphics and text. The remainder of the pages contain only graphics. The test prints on the media in tray 1.





This test may be printed from either Configuration Menu or the Diagnostics Menu.

To run the print quality pages from the Diagnostics Menu:

1. Select **PRINT TESTS**, and press **Select** (☑).
2. Select **Print Quality Pgs**, and press **Select** (☑).
   The message Printing Quality Test Pages is displayed.
   Note: Once the test is started, it cannot be cancelled.

When the test pages print, the printer returns to the original screen.

Hardware Tests

Panel Test

This test verifies the operator panel LCD function.

To run the Panel Test:

1. Select **Hardware Tests** from Diag Menu, and press **Select** (✓).
2. Select **Panel Test**, and press **Select** (✓).
   The Panel Test continually executes.

press **Stop** (✗) to cancel the test.

Button Test

This test verifies the operator panel button function.

To run the Button Test:

1. Select **Hardware Tests** from Diag Menu, and press **Select** (✓).
2. Select **Button Test**, and press **Select** (✓).
   press count: 0 appears.
   press each operator panel button, and watch to see if the number of press counts increases by one for each press.
   Note: If you press **Stop** (✗), you end the test.

press **Stop** (✗) to cancel the test.

DRAM Test

This test checks the validity of DRAM, both standard and optional. The test writes patterns of data to DRAM to verify that each bit in memory can be set and read correctly.

To run the DRAM Test:

1. Select **Hardware Tests** in Diag Menu, and press **Select** (✓).
2. Select **DRAM Test**, and press **Select** (✓).
   a. The printer displays:

   ```
   DRAM Test Testing…
   ```

   b. The printer initiates a POR of the printer, and the following screen is displayed:

   ```
   Resetting the
   Printer
   ```

   c. After the POR, the printer begins testing the memory.

   ```
   DRAM Test                128M
   P:######     F:#####
   ```

   P:###### represents the number of times the memory test has passed and finished successfully. Initially, 000000 displays with the maximum pass count being 99,999.
   F:##### represents the number of times the memory test has failed and finished with errors. Initially, 0000 displays with the maximum fail count being 99,999.

3. Once all the memory is tested, the test stops.

To stop the test early, turn off the printer.

CACHE Test

The CACHE Test is used to verify the processor cache is functioning properly.

1. Select **Hardware Test** in Diag Menu, and press **Select** (☑).
2. Select **CACHE Test**, and press **Select** (☑).
   a. The printer displays:

   ```
   CACHE Test Testing…
   ```

   b. The printer initiates a POR of the printer, and the following screen is displayed:

   ```
   Resetting the
   Printer
   ```

   c. Upon completion of the POR, the following screen is displayed:

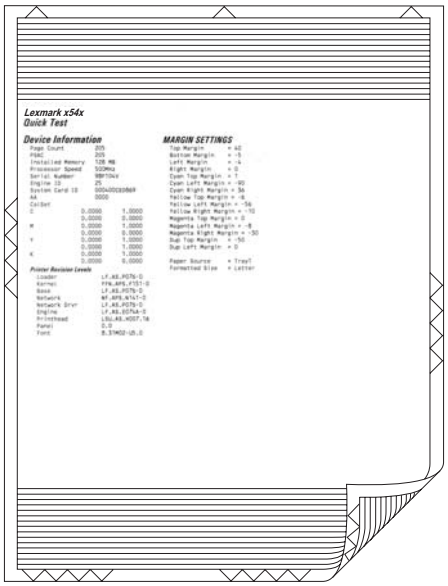
   ```
   CACHE Test x100
   P:######     F:######
   ```

   P:###### represents the number of times the CACHE Test has passed, finished successfully. Initially, 000000 is displayed. The maximum pass count is 999,999.
   F:###### represents the number of times the CACHE Test has failed, finished with errors. Initially, 000000 is displayed. The maximum fall count is 999,999.
3. To stop the test, turn the printer off.

Duplex Tests

Quick Test (duplex)

This test prints a duplex version of the Quick Test that can be used to verify the correct placement of the top margin on the back side of a duplex page.



Note: Before you set the duplex top margin, be sure to set the registration. See **"Registration" on page 3-4**.

The paper you choose to print the page on should be either Letter or A4.

To run the Quick Test (duplex):

1. Select **DUPLEX TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Quick Test**, and press **Select** (✓).
3. Select **Single** or **Continuous**, and press **Select** (✓).
   - The single Duplex Quick test prints the Quick Test on front and back.
   - The printer attempts to print the Quick Test Page from the default paper source.
   - Check the Quick Test Page for the correct offset between the placement of the first scan line on the front and back side of the duplexed sheet.

For information about changing the margin, see **"Top Margin (duplex)" on page 3-16**.

The single test stops automatically when a single duplex sheet is printed, and the continuous test continues until you press **Stop** (✕).

Left Margin (duplex)

This setting shifts the image on the backside of the duplex sheet to the left or right to correctly position it on the page. Therefore, be sure to set the top margin in REGISTRATION before setting the duplex top margin. See **"Registration" on page 3-4**.

To set the Left Margin (duplex):

1. Select **DUPLEX TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Quick Test**, and press **Select** (✓).
3. Select **Single**, and press **Select** (✓).

4. Hold the page to the light to see whether the left margin of the back aligns with the left margin of the front.
5. Select **Left Margin** from DUPLEX TESTS.
6. Use ◀ or ▶ to select the margin setting you need to change.
   - Each increment shifts the duplex left margin by 4 pixels at 500 dpi (0.0067 inches or 0.1693 mm).
   - The Left Margin (duplex) range is -25 to + 25, and the default value is 0.
   - An increase in the value moves the backside left margin to the right, and widens the left margin. A decrease moves the backside left margin to the left, and narrows the left margin.
7. press **Select** (☑) to save the new value.
8. Print the Quick Test (duplex) again (steps 1–4) to verify the adjustment. Repeat if necessary.

Top Margin (duplex)

This setting controls the offset between the first scan line on the front of the duplex page and the first scan line on the back of the page. Therefore, be sure to set the top margin in REGISTRATION before setting the duplex top margin. See **“Registration” on page 3-4**.

To set the Top Margin (duplex):

1. Select **DUPLEX TESTS** from Diag Menu, and press **Select** (☑).
2. Select **Quick Test**, and press **Select** (☑).
3. Select **Single**, and press **Select** (☑).
4. Hold the page to the light to see whether the top margin of the back aligns with the top margin of the front.
5. Select **Top Margin** from DUPLEX TESTS.
6. Use ◀or ▶ to select the margin setting you need to change.
   - Each increment shifts the duplex top margin by 1/100 of an inch.
   - The Top Margin (duplex) range is -50 to +50, and the default value is 0.
   - An increase in the value moves the backside top margin down and widens the top margin. A decrease moves the top margin upward and narrows the top margin.
7. press **Select** (☑) to save the new value.
8. Print the Quick Test (duplex) again (steps 1–4) to verify the adjustment. Repeat if necessary.

Sensor Test (duplex)

This test determines if the duplex sensors and switches are working correctly.

To run the Sensor Test:

1. Select **DUPLEX TESTS** from Diag Menu, and press **Select** (☑).
2. Select **Sensor Test**, and press **Select** (☑).
   The printer displays Sensor Test Testing…. The exit sensor (the optical sensor located in the return paper path) and the input sensor (the optical sensor located in the back part of the duplex unit) are tested and reported as Open or Closed. Toggle the sensors to change the message, and verify the sensors are working correctly.

press **Back** (↩) to exit the sensor test.

Input Tray tests

Feed Tests

This test allows you to observe the paper path of media as it passes through the printer. Any installed input tray can be tested. The pages fed through the printer are blank.

To run the Feed Test:

1. Select **INPUT TRAY TESTS** from Diag Menu, and press **Select** (☑).
2. Select **Feed Tests**, and press **Select** (☑).
3. Select the tray to be tested. Choices are installed trays, including Tray 1, Tray 2, and MP Feeder.
4. Open the upper rear door to view the paper path.
   Note: Do not open the upper front door. The test will not run if the front door is open.
5. Select **Single** or **Continuous**, and press **Select** (☑).
   - Single—a single sheet of blank paper is fed, and the test stops.
   - Continuous—sheets are fed continuously until **Stop** (☒) is pressed.

Sensor Test

This test is used to verify that the sensors are working correctly for an individual input tray.

1. Select **INPUT TRAY TESTS** from Diag Menu, and press **Select** (☑).
2. Select **Sensor Tests**, and press **Select** (☑).
3. Select the tray where you want to test the sensors. Depending on the tray selected, you may have **Empty Sensor**, **Low Sensor**, or **Pass thru Sensor**.
   Sensors will be displayed with either Open or Closed. Toggle the sensor you want to test, and note the change of state of that sensor.

Input Tray	Empty Sensor	Low Sensor	Pass thru Sensor
Tray 1	✘	✘	✘
Tray 2 (650-sheet duo tray)	✔	✔	✔
MP Feeder	✘	✘	✘

To Exit the test, press **Back** (⮌) or **Stop** (☒).

Base Sensor Test

These tests allow you to verify the correct functioning of the front door, input, and output sensors.

1. Select **Base Sensor Test** from Diag Menu, and press **Select** (☑).
2. Select the sensor you want to test, and press **Select** (☑).
   The following test are available:

Sensor	Value	How to test
Input (Front Door)	Value opened/ Not closed	Open and close front door. The sensor should change state.
Standard Bin	Bin full	Toggle the bin full media flag attached to the redrive unit.
S1	Media clear	Remove the media tray. Activate the input sensor flag. The sensor should change state.
S2	Media clear	Remove and re-insert the media tray. The sensor should change state.
Fuser exit sensor	Media clear	Open the front door. Activate the fuser exit flag. The sensor should change state.
C-TMC Sensor	Value opened/ Not closed	Remove the cyan toner cartridge. Shine a flashlight on the toner level sensor. The sensor should change state.
M-TMC Sensor	Value opened/ Not closed	Remove the magenta toner cartridge. Shine a flashlight on the toner level sensor. The sensor should change state.
Y-TMC Sensor	Value opened/ Not closed	Remove the yellow toner cartridge. Shine a flashlight on the toner level sensor. The sensor should change state.
K-TMC Sensor	Value opened/ Not closed	Remove the black toner cartridge. Shine a flashlight on the toner level sensor. The sensor should change state.

To exit the test, press **Back** (⮌) or **Stop** ✕.

Device Tests

Flash Test

This menu item appears only if the flash card is installed. Data is written to the flash card and read back to check the accuracy.

Warning: This test deletes all data stored on the flash device. After the test is over, reformat the flash using **Format Flash** in the customer Utilities Menu.

To run the Flash Test:

1. Select **DEVICE TESTS** from Diag Menu, and press **Select** (☑).
2. Select **Flash Test**, and press **Select** (☑).
   Contents will be lost. Continue? appears.
3. To continue, select **Yes**, and press **Select** (☑). To end the test, select **No**, and press **Select** (☑).
   If you continue, Flash Test Testing… appears.
   - If the test is successful, Flash Test Passed appears. Use Format Flash in the Utilities Menu to reformat the flash card.
   - If the test is unsuccessful, Flash Test Failed appears. Replace the flash card.
4. press **Back** (⮌) to remove the message and return to the Device Tests menu.

Printer Setup

Defaults

US/Non-US defaults changes whether the printer uses the US factory defaults or the non-US factory defaults. The settings affected include paper size, envelope size, PCL symbol set, code pages, and units of measure.

Warning: Changing this setting resets the printer to factory defaults, and data may be lost. It cannot be undone.

Page Counts

You can view, but not change any of the three counts displayed under PAGE COUNTS.

To view the Prt Color Pg Count, the Prt Mono Pg Count, or the Perm Page Count:

1. Select **PRINTER SETUP** from DIAGNOSTICS, and press **Select** (☑).
2. Select **PAGE COUNTS**, and press **Select** (☑).
3. Select the page count you wish to view:
   - Prt Color Pg Count
   - Prt Mono Pg Count
   - Perm Page Count
4. press **Select** (☑).
   The value of the page count appears.

press **Back** (⮌) to return to PRINTER SETUP.

Serial Number

The serial number can only be viewed. It cannot be changed.

To view or change the serial number:

1. Select **PRINTER SETUP** from DIAGNOSTICS, and press **Select** (☑).
2. Select **Serial number**, and press **Select** (☑).

press **Back** (⮌) to return to PRINTER SETUP.

Engine Setting 1 through 4

Warning: Do not change these settings unless requested to do so by your next level of support.

Model Name

The model name can only be viewed and cannot be changed.

Configuration ID

The two configuration IDs are used to communicate information about certain areas of the printer that cannot be determined using hardware sensors. The configuration IDs are originally set at the factory when the printer is manufactured. However, the servicer may need to reset Configuration ID 1 or Configuration ID 2 whenever the system board is replaced. The IDs consist of eight digits. The first seven digits in each ID are hexadecimal numbers, while the last digit is a checksum of the preceding seven digits. Each ID can contain a combination of the digits 0 through 9, and the letters A through F.

Note: When the printer detects a Configuration ID that is not defined or invalid, the following occurs:

- The default standard model Configuration ID is used instead.
- Configuration ID is the only function available in DIAGNOSTICS.

- Unless the menu is in DIAGNOSTICS, Check Config ID displays.

To set the configuration ID:

1. Select **PRINTER SETUP** from DIAGNOSTICS, and press **Select** (☑).
2. Select **Configuration ID**, and press **Select** (☑).

   The current value for Configuration ID 1 appears with the left character or digit underlined.
3. Enter the Configuration ID 1.
   - Change the left character or digit first.
   - To change a character or digit, press ◀ to decrease or ▶ to increase the underlined value, and press **Select** (☑).
   - To move to the next character or digit, press ◀ or ▶, and press **Select** (☑).
   - When you press **Select** (☑) on the last digit, the value will be submitted.

     If Invalid ID appears, the entry is discarded, and the previous Configuration ID 1 is displayed on the screen.

     If the process is successful, Submitting Selection appears on the display, followed by the current value for Configuration ID 2.
4. Repeat the steps for entering the Configuration ID 2, and press **Select** (☑).

   If the Configuration ID 2 is validated, Submitting Selection appears, and a check (✓) appears next to **Printer Setup**.
5. Restart the printer. A POR is not automatically performed.

ITU Barcode

The 16-digit numeric value matches the ITU installed in the printer. If you replace the ITU, re-enter this value. **Stop** (☒) exits the menu.

To enter the ITU barcode:

1. Select **PRINTER SETUP** from Diag Menu, and press **Select** (☑).
2. Select **ITU Barcode**, and press **Select** (☑).
3. To enter the 16-digit numeric value:

   Use ◀ to decrease the leftmost digit value or ▶ to increase the value. press **Select** (☑) to advance to the next digit. If a digit is already correct, press **Select** (☑) to accept the number and to continue. When the last number is entered and you press **Select** (☑), Submitting changes… should appear. if the entered number is incorrect, Check Sum Does Not Match displays. Check and re-enter the number.

Enable Edge to Edge Copy

This setting is set to either on or off. Off is the default setting.

Reset Fuser Count

Resets the fuser count value to zero. The Event Log records each time that a user executes the Reset Fuser Count operation. See **"Event Log" on page 3-32** for more information. This setting appears only if the Maintenance Warning and Intervention function is enabled in the printer Configuration ID.

To reset the fuser count:

1. Select **Printer Setup** from Diag Menu, and press **Select** (✓).
2. Select **Reset Fuser Cnt**, and press **Select** (✓).
3. Select **Reset**, and press **Select** (✓).
   Resetting Fuser Count Value appears.

To cancel a reset, press **Back** (↩).

EP Setup

EP Defaults

This setting is used to restore each printer setting listed in EP SETUP to its factory default value. To restore EP Defaults:

1. Select **EP Setup** from Diag Menu, and press **Select** (✓).
2. Select **EP Defaults**, and press **Select** (✓).
3. Select **Restore** to reset the values to the factory settings, and select **Do Not Restore** to exit without changing the settings.

To cancel and return to the menus, press **Back** (↩).

Fuser Temp

This adjustment can be used to help solve some customer problems with paper curl on low-grade papers and problems with letterheads on some types of media.

The fuser temperature can be adjusted to: Low, Normal, High. The default is Normal.

To restore EP Defaults:

1. Select **EP Setup** from Diag Menu, and press **Select** (✓).
2. Select **Fuser Temp**, and press **Select** (✓).
3. Select Normal, High, or Low. The default is Normal.

DC Charge Adjust, Deve Bias Adj, Transfer Adj

Each of these three settings enables you to adjust the high-voltage levels controlling the electro photographic process. You will use these settings to compensate for unusual operating circumstances such as high humidity. The printer uses the value of these settings together with other settings to calculate printing speed and media selection.

TPS Setup

Right or Left TPS

The value of the TPS sensor is set at manufacturing. If a sensor is replaced, enter the 32-digit hexadecimal TPS value from the barcode next to the sensor.

To enter the value:

1. Select **TPS SETUP** from Diag Menu, and press **Select** (✓).
2. Select **Right** or **Left**, and press **Select** (✓).
   TPS Right 1-16 or TPS Left 1-16 appears above a blinking 0 in the left position.
3. To enter a character or digit:
   a. press ◀ to decrease or ▶ to increase the blinking value.
   b. Pause for several seconds without pressing any buttons. The blinking value becomes solid.
      If the value is incorrect, use **Back** (↩) to go back and re-enter the number.
   c. Continue until the last value is reached.
   d. When the last of the 16 values is entered and becomes solid, TPS Right 17-32 or TPS Left 17-32 appears.
   e. Continue entering and pausing.
4. After the 32nd number is entered and becomes solid, the number is automatically entered.
   - If the number is incorrect, Checksum does not match appears, and the original screen appears to re-enter the value.
   - If the number is correct, Saving changes to NVRAM appears.

Reset Color Cal

This setting allows the device to adjust the alignment of the color planes using pre-programmed default values.

To reset the programmed value:

1. Select **TPS SETUP** from DIAGNOSTICS, and press **Select** (✓).
2. Select **Reset Color Cal**, and press **Select** (✓).
   Resetting appears. When the reset is complete, the screen is automatically returned to TPS SETUP.

Cal Ref Adj

Used with Reset Color Cal, which resets to a default value, Cal Ref Adj allows you to fine tune the TPS function.

To set the Cal Ref Adj:

1. Select **TPS Setup** from Diag Menu, and press **Select** (✓).
2. Select **Cal Ref Adj**, and press **Select** (✓).
3. Select **CMY** or **Black**, and press **Select** (✓).
4. press ◀ to decrease or ▶ to increase the value.
   The values can be -8 to +8, and the default value is 0.

To cancel and return to the menus, press **Back** (↩).

Reports

Main Settings Page

To print the Menu Settings Page:

1. Select **Reports** from Diag Menu, and press **Select** (✓).
2. Select **Menu Settings Page**, and press **Select** (✓).

Event Log

Display Log

The event log provides a history of printer errors. It contains the 12 most recent errors that have occurred on the printer. The most recent error displays in position 1, and the oldest error displays in position 12 (if 12 errors have occurred). If an error occurs after the log is full, the oldest error is discarded. Identical errors in consecutive positions in the log are entered, so there may be repetitions. All 2*xx* and 9*xx* error messages are stored in the event log.

To view the event log:

1. Select **EVENT LOG** from Diag Menu, and press **Select** ( ).
2. Select **Display Log**, and press **Select** ( ).

   Up to three error codes display at a time. press ◀ or ▶ to view additional error codes. press ▶ to view additional details.

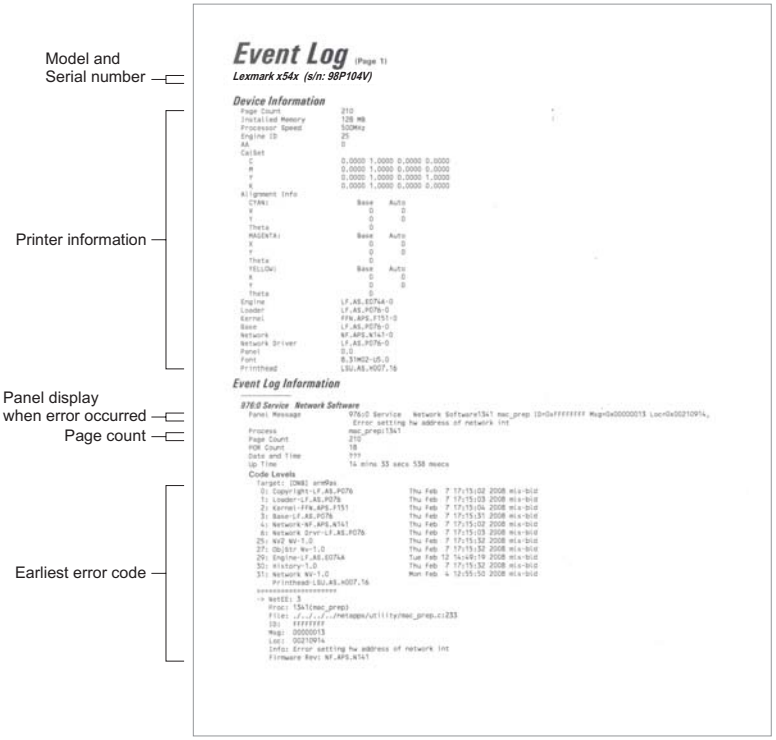
press **Back** ( ) to return to the EVENT LOG menu.

Print Log

Additional diagnostic information is available when you print the event log from DIAGNOSTICS rather than CONFIG MENU.

The Event Log printed from DIAGNOSTICS includes:

- Detailed printer information, including code versions
- Time and date stamps
- Page counts for most errors
- Additional debug information in some cases



The printed event log can be faxed to your next level of support for verification or diagnosis.

To print the event log:

1. Select EVENT LOG from DIAGNOSTICS, and press **Select** (✓).
2. Select **Print Log**, and press **Select** (✓).

press **Back** ( ) to return to EVENT LOG.

Clear Log

Use Clear Log to remove the current information in the Event Log. This affects both the viewed log and the printed log information.

1. Select **Clear Log** from the Event Log menu, and press **Select** (✓).
2. Select **YES** to clear the Event Log or **NO** to exit the Clear Log menu. If **YES** is selected, Deleting EVENT LOG displays on the screen.

press **Back** ( ) to return to EVENT LOG.

Scanner Tests

ASIC Test

This test initiates a scan of the scanner ASIC's memory.

While this test is executing ASIC Test Running is displayed. When the test is complete, ASIC Test Passed is displayed if the ASIC memory is ok. ASIC Test Failed is displayed if the test fails. press the **Back** or **Stop** buttons to clear the display message

Feed Test

This test executes a continuous feed test from ADF or flatbed.

Note: Neither test produces printed output, or increments any MPS counters.

After selecting this test, <DISPLAY> is displayed.

Running. Flatbed:xxxx ADF:xxxx is displayed while the feed test is executing. To stop the test, press **Back** or **Stop**.If an error occurs during the test, Feed Test failed Flatbed:xxxx ADF:xxxx is displayed. press **Return** or **Stop** to clear the message.

Sensor Test

A series of sensor tests are available to test the scanner's ADF and flatbed sensor functionality. The following table lists the available tests.

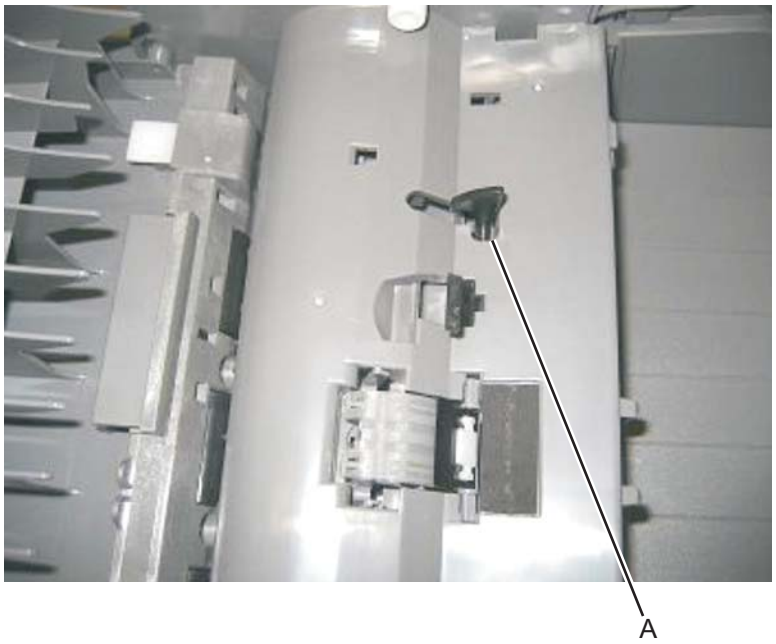
Scanner sensor tests

Sensor	Toggle state and description
ADF paper present	Closed: Paper not present in the ADF Open: Paper present in the ADF
FB cover closing	Closed: Flatbed cover in process of closing Open: Flatbed cover open
Home sensor	Closed: Scanner carriage not positioned over the home sensor. Open: Scanner carriage positioned over the home sensor.
ADF cover open	Closed: ADF cover closed Open: ADF cover open
Scan 1st sensor	Closed: Paper isn't above this sensor. Open: Paper is being fed from the ADF and the top edge passes over this sensor.
Scan 2nd sensor	Closed: Paper isn't above this sensor Open: Paper is being fed from the ADF and the top edge passes over this sensor.

ADF paper present sensor test

This test should be used if the ADF fails to feed paper when a scan is performed**.** To test this sensor perform the following steps:

1. In the sensor test menu, press ◀ or ▶ to scroll to the ADF paper present test.
2. press **Select** (☑).Starting Test displays. ADF Paper: Closed displays.
3. press the ADF paper present sensor actuator (A) the top of the ADF unit. ADF Paper: Open should display if the sensor is working properly.

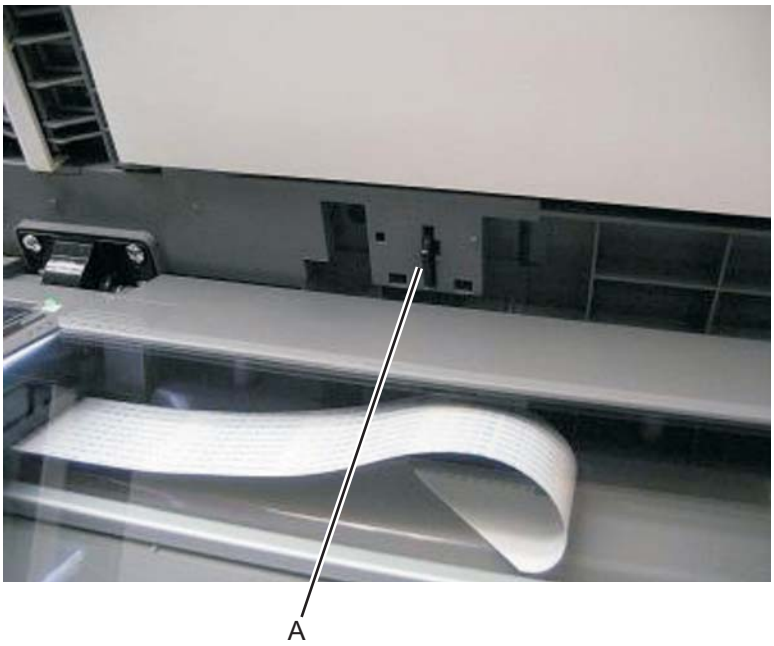


4. press **Back** (⮌) to exit the test and return to the Scanner sensor tests.

FB Cover closing sensor test

This test verifies the functionality of the FB cover closed sensor. To test this sensor. perform the following steps:

1. In the sensor test menu, press ◀ or ▶ to scroll to the FB Cover closing sensor test.
2. press **Select** (☑). Starting Test displays. FB Cover: Closed displays.
3. Lift the flatbed cover, and depress the FB cover actuator (A).



4. FB Cover: Open should display if the sensor is working properly.
5. press **Back** (⮌) to exit the test and return to the Scanner sensor tests.

Home sensor test

This test verifies the functionality of the home position sensor. To test this sensor. perform the following steps:

1. In the sensor test menu, press ◀ or ▶ to scroll to the Home sensor test.
2. press **Select** (☑).
3. Starting Test displays.
4. Home: Closed displays.
5. Home: Open should display if the sensor is working properly.
6. press **Back** (⮌) to exit the test and return to the Scanner sensor tests.

ADF Cover closed sensor test

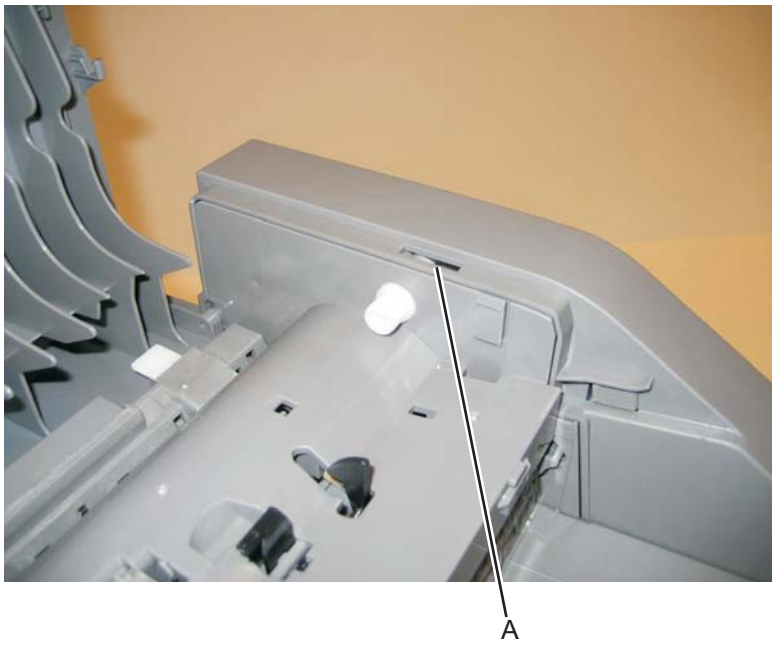
This test verifies the functionality of the ADF cover closed sensor. To test this sensor. perform the following steps:

1. In the sensor test menu, press ◀ or ▶ to scroll to the ADF Cover closed sensor test.
2. press **Select** (☑).
3. Starting Test displays.
4. ADF Cover: Closed displays.
5. Lift the ADF top cover.
6. ADF Cover: Open should display if the sensor is working properly.
7. press **Back** (⮌) to exit the test and return to the Scanner sensor tests.

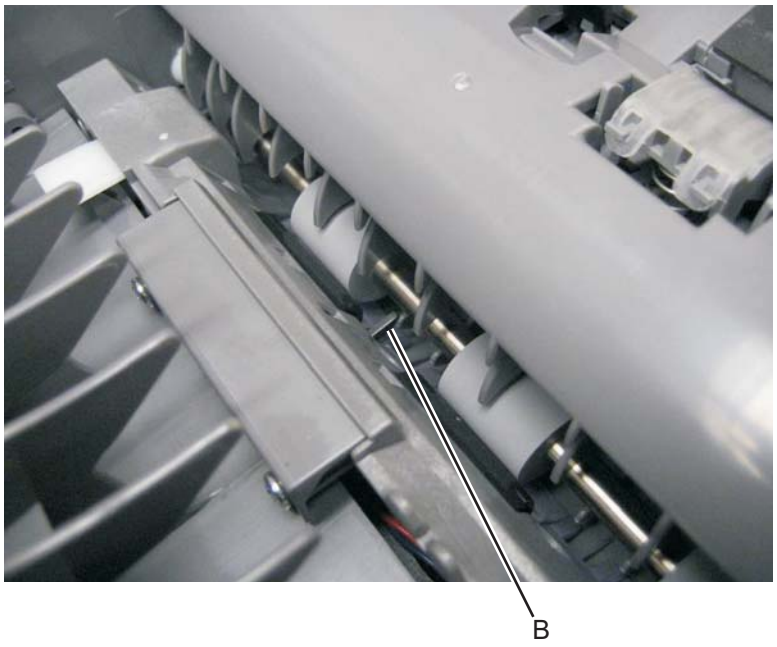
Sensor 1 test

This test verifies the functionality of scan sensor 1. To test this sensor. perform the following steps:

1. In the sensor test menu, press ◀ or ▶ to scroll to the Sensor1 test.
2. press **Select** (☑). Starting Test displays. Sensor 1: Closed displays.
3. Lift the ADF top cover, and close the ADF cover sensor by pressing down on the ADF sensor actuator (A) with a small flat blade screwdriver.



4. press the Sensor 1 actuator (B) located in the ADF paper path. Sensor 1: Open should display if the sensor is working properly.

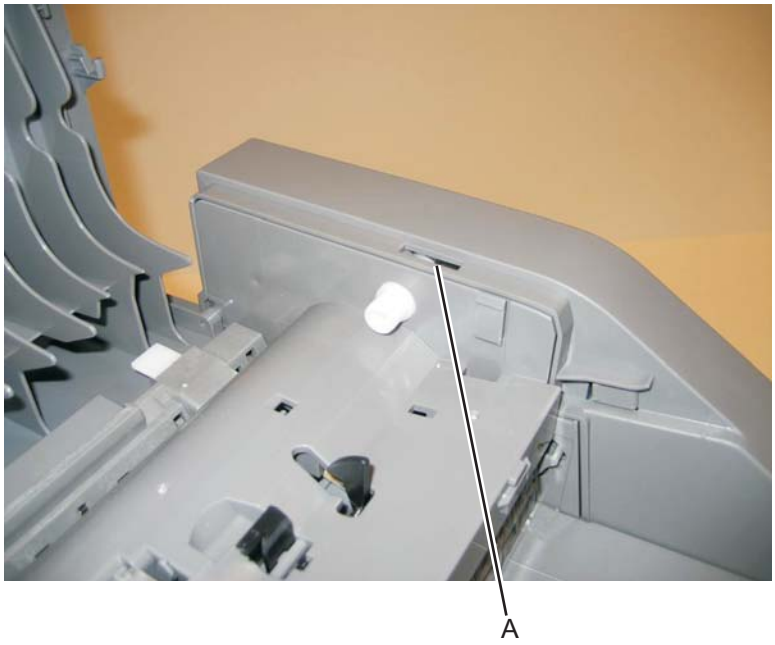


5. press **Back** (⮌) to exit the test and return to the Scanner sensor tests.

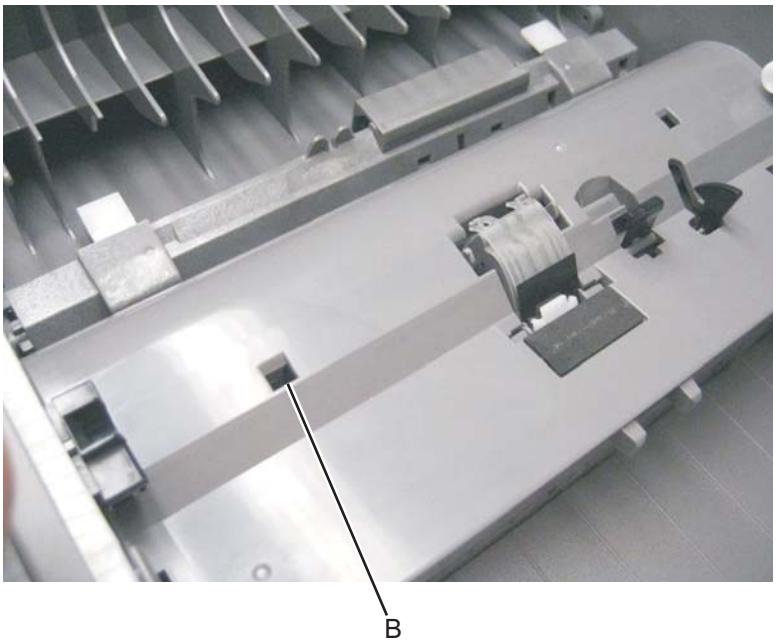
Sensor2 test

This test verifies the functionality of scan sensor 2. To test this sensor. perform the following steps:

1. In the sensor test menu, press ◀ or ▶ to scroll to the Sensor 2 test.
2. press **Select** (☑). Starting Test displays. Sensor 2: Closed displays.
3. Lift the ADF top cover, and close the ADF cover sensor (A) by pressing down on the ADF sensor actuator with a small flat blade screwdriver.



4. Move the Sensor 2 actuator by inserting a small screwdriver into the hole (B) and gently toggling the actuator. Sensor 2: Open should display if the sensor is working properly.



5. press **Back** (↩) to exit the test and return to the Scanner sensor tests.

EXIT Diags

press **Select** (☑) to exit Diag Menu. The printer performs a power-on reset and returns to normal mode.

Configuration Menu

Available tests

The tests display on the operator panel in the order shown for all models.

Configuration menu

USB Scan to Local	See **"USB Scan to Local" on page 3-31**.
Prt Quality Pgs	See **"Prt Quality Pages" on page 3-31**.
Color Trapping	See **"Color Trapping" on page 3-31**.
Reports	See **"Reports" on page 3-32**.
Panel Menus	See **"Panel Menus" on page 3-32**.
PPDS Emulation	See **"PPDS Emulation" on page 3-32**.
Demo Mode	See **"Demo Mode" on page 3-33**.
Factory Defaults	See **"Factory defaults" on page 3-33**.
Energy Conserve	See **"Energy Conserve" on page 3-33**.
Min Copy Memory	See **"Min Copy Memory" on page 3-34**.
Format Fax Storage	See **"Format Fax Storage" on page 3-34**.
Auto Color Adj	See **"Auto Color Adj" on page 3-34**.
ADF Edge Erase	See **"ADF Edge Erase" on page 3-34**.
FB Edge Erase	See **"FB Edge Erase" on page 3-35** .
Scanner Manual Registration	See **"Scanner Manual Registration" on page 3-35**.
Disable Scanner	See **"Disable Scanner" on page 3-36**.
Font Sharpening	See **"Font Sharpening" on page 3-37**.
Pel Blurring	See **"Pel Blurring" on page 3-37**.
Exit Config Menu	This selection exits Configuration Menu, and Resetting the Printer displays. The printer performs a POR and returns to normal mode.

USB Scan to Local

USB Scan to Local enumerates a USB simple device or USB composite device. In the off position the simple USB device is enumerated: in the on position, the composite USB device is enumerated.

Prt Quality Pages

The Prt Quality Pages can be printed from both the Configuration Menu and the Diagnostics Menu. The Configuration Menu is limited in information compared to the pages printed from the Diagnostics Menu.

To help isolate print quality problems, print the Print Quality Test Pages. The pages are formatted. The Printing Quality Test Pages message appears, then the pages print. The message remains on the operator panel until all the pages print.

press **Select** (☑) to print the pages. The Print Quality Test Pages contain several pages. The first page which is printed in English text contains only a mixture of text and graphics. The information includes values of the Quality Menu settings in Settings and printer and toner cartridge configuration information. The remaining pages only contain graphics. For samples of the pages, see **"Print quality test pages (Prt Quality Pgs)" on page 3-11**.

Color Trapping

Uses an algorithm to compensate for mechanical incorrect registration in the printer. When small black text or fine black lines are being printed, the printer checks to see if they are being printed on top of a colored background. If so, rather than remove the color from beneath the black content, the printer leaves the color around the edge of the text or line. The hole in the colored region is reduced in size, which prevents the characteristic white gap that is caused by incorrect registration.

Values include Off and numbers 1–5 (the default is 2). Values 1 through 5 indicate the amount of color remaining beneath the black content. The default is each setting increments by 1/600 of an inch. The more inaccurate the registration setting, the higher the setting needs to be adjusted. Selecting **Off** disables color trapping.

Reports

Menu Settings Page

Print the menu settings pages to list the customer settings and to verify printer options are installed correctly. It is helpful to print the customer settings before you restore factory defaults or make major changes.

To print the menu settings:

1. Select **Reports** from the Config Menu, and press **Select** (✓).
2. Select **Menu Settings Page**, and press **Select** (✓).

Event Log

Lets the system support person print a limited set of the information contained in the Diagnostics Menu version of the printed Event Log. For a sample of a printout, see **“Event Log” on page 3-23**. The limited Configuration log and the full Diagnostics log printed versions show the same operator panel messages when they print and follow the same layout guidelines.

To print the event log:

1. Select **Reports** from the Config Menu, and press **Select** (✓).
2. Select **Print Log**, and press **Select** (✓) to begin printing the log.

Panel Menus

Lets the system support person enable or disable the operator panel menus. Selecting **On** (the default) allows users to change values for the printer. **Off** disables the users’ access to menus. If a user presses **Menu** (🗝), they receive a message that the panel menus are locked. When set to **Off**, this setting restricts all menu access, even to menus or items set for PIN access. However, when set to **On**, all PIN restrictions are in restored.

This menu item appears only when the PJL PASSWORD Environment variable is set to 0.

PPDS Emulation

Activates or deactivates the Personal Printer Data Stream (PPDS) emulation language. This menu item appears only if the PPDS interpreter is available.

Demo Mode

Lets marketing personnel or merchandisers demonstrate the printer to potential customers by printing the demo page.

Selections include Deactivate (default) and Activate. Select **Deactivate** to turn Demo Mode off; or select **Activate** to turn Demo Mode on.

Factory defaults

Sets the majority of printer values back to their factory default settings.

Warning: This selection cannot be reversed, so this operation should be used only as a last resort to fix any printer problem. When factory default settings are restored:

- All downloaded resources (fonts, macros, symbol sets) in the printer memory (RAM) are deleted.
- All menu settings return to the factory default setting *except*:
  - The Display Language setting in the Setup Menu.
  - All settings in the Parallel Menu, Serial Menu, Network Menu, Infrared Menu, Local Talk Menu, and USB Menu.

To print current menu settings:

It is recommended that you first print the customer's current settings by printing a copy of the Menu Settings pages. Customer settings are available from the Ready prompt, Diagnostics Menu settings are available in the Diagnostics Menu, and Config Menu settings are available in the Config Menu.

1. Turn off the printer, or select **Exit Config Menu**.
2. At the Ready prompt, select **Menus** (⊶), and press **Select** (☑).
3. Select **Reports**, and press **Select** (☑).
4. Select **Menu Settings Page**, and press **Select** (☑).
5. Enter the Diagnostic Menu, select **Reports**, **Menu Settings Page**, and press **Select** (☑).
   See **"Menu Settings Page" on page 3-32**.
6. Turn off the printer, or select **Exit Diags**.
7. Enter Configuration Menu, select **Reports**, **Menu Settings Page**, and press **Select** (☑).
   See **"Menu Settings Page" on page 3-32**.

To reset factory defaults:

1. Select **Reports** from the Config Menu, and press **Select** (☑).
2. Select **Factory Defaults**, and press **Select** (☑).
3. Select **Restore Base** (for locally attached printers) or **Restore STD NET** (if you have integrated network support).
   Submitting Changes… appears on the operator panel, and then the printer PORs (restarts in Ready mode).

Energy Conserve

Affects the values that appear in the Power Saver menu item in the Setup Menu. This menu item appears only when the printer model does not support Automatic Power Saver or has deactivated Automatic Power Saver. The menu item affects only the values that are displayed in the Power Saver menu item.

Select **Off** in Energy Conserve to allow Power Saver in the customer menu to display Disable as an option. If **Disable** is selected in the customer Power Saver, the printer deactivates the Power Saver feature. Select **On** (the default) in Energy Conserve to prevent **Disable** from appearing as an option in the Power Saver setting, and preventing the customer from turning off Power Saver.

Min Copy Memory

This setting allocates the amount of DRAM memory to be used for storing copy jobs in the queue. 25, 35,50,80 and 100 MB are the available settings. To adjust the minimum copy memory, perform the following steps:

1. In the configuration menu, scroll to the MinCopy Memory item, and press ☑ .
2. Use the ◀ or ▶ to increase or decrease the setting's value.
3. When the desired value is displayed, press ☑ .

Format Fax Storage

This setting allows the user to format non volatile fax storage memory. While formatting is taking place, Formatting Fax Flash DO NOT POWER OFF appears. After formatting is complete, the display reverts to the main menu.

Auto Color Adj

Sets the suggested number of pages which the printer should print between consecutive calibrations.

Selections are **Off** and the values between **100** and **1000** in increments of 50. The default is 500 pages.

If the printer exceeds the set value while printing a job, it completes the current job and any other jobs received while printing the current job before it initiates a calibration. The printer does not cancel or suspend an active job in order to perform a calibration. If a user is using the menus, including the Configuration Menu and the Diagnostics Menu, an automatic color adjust calibration does not occur.

When an event other than page count triggers this calibration, the count that monitors the maximum number of pages printed will be reset. For example, if the user replaces an empty toner cartridge, the next time the printer is started, it will sense the new cartridge and perform the automatic color adjustment, even though the page counter for Auto Color Adj is fewer than required. The Auto Color Adj page counter is then reset.

Note: An automatic color adjust can also be initiated manually. This calibration procedure should be performed when the MFPs internal print settings are changed. To perform and automatic color adjust, perform the following steps:

1. press ⚿ to enter the Administration menu.
2. press ◀ or ▶ to scroll to the **Settings** menu.
3. press ☑ .
4. press ◀ or ▶ to scroll to the **Quality** menu.
5. press ☑ .
6. press ◀ or ▶ to scroll to the **Color Adjust** menu item.
7. press ☑ . Calibrating displays. Ready will display when the calibration procedures complete.
8. press ↺ twice to exit the Administration menu.

ADF Edge Erase

This menu item sets the size, in millimetres, of the no-print area around an ADF scan job.All copy jobs have a minimum of a two millimetre border. Copy jobs will use the setting or two millimetres, whichever is larger.

To adjust the ADF edge erase setting, perform the following steps:

1. In the Configuration menu, select the ADF Edge Erase menu item.
2. Press ◀ or ▶ to increase or decrease the setting's value.
3. When the desired value is displayed, press ☑ .

FB Edge Erase

This menu item sets the size, in millimetres, of the no print are around a flatbed scan job. Copy jobs will use the setting or two millimetres, whichever is larger.

To adjust the flatbed edge erase setting, perform the following steps:

1. In the Configuration menu, select the FB Edge Erase menu item.
2. Use the ◀ or ▶ to increase or decrease the settings value.
3. When the desired value is displayed, press ☑ .

Scanner Manual Registration

This item is used to manually register the flatbed and ADF on the MFP's scanner unit. Registration should be performed whenever the ADF unit, flatbed unit, or controller card are replaced.

To manually register the ADF perform the following steps:

1. In the Configuration Menu, scroll to the Scanner Manual Registration menu item.
2. Press ☑ .
3. Scroll to the Print Quick Test Page menu item.
4. Press ☑ .
5. To view and adjust the simplex ADF registration, place the quick test page into the ADF, scroll to the Copy Quick Test Page item and press ☑ .
6. After the quick test page copies, scroll to ADF and press ☑.
7. Scroll to Horizontal Adjust, and press ☑ .
8. Use the ◀ or ▶ to increase or decrease the settings value.

Note: Each button press move the margin values one pixel in the respective direction.

9. Press ☑ to accept the value.
10. Scroll to Top Edge and press ☑ .
11. Use the ◀ or ▶ to increase or decrease the settings value.

Note: pressing ◀ moves the margin up and pressing ▶ moves the margin down.

12. Press ☑ to accept the value.

To manually register a Duplex ADF, perform the following steps:

1. In the Configuration Menu, scroll to the Scanner Manual Registration menu item.
2. Press ☑ .
3. Scroll to the Print Quick Test Page menu item.
4. Press ☑ .
5. To view and adjust the duplex ADF front side registration, place the quick test pageface up into the ADF, scroll to the Copy Quick Test Page item and press ☑ .
6. After the quick test page copies, scroll to ADF Frontside and press ☑ .
7. Scroll to Horizontal Adjust, and press ☑ .
8. Use the ◀ or ▶ to increase or decrease the settings value.

Note: Each button press move the margin values one pixel in the respective direction.

9. Press ☑ to accept the value.
10. Scroll to Top Edge, and press ☑ .
11. Use the ◀ or ▶ to increase or decrease the settings value.

Note: pressing ◀ moves the margin up and pressing ▶ moves the margin down.

12. Press ☑ to accept the value.
13. To view and adjust the duplex ADF backside registration, place the quick test pageface down up into the ADF, scroll to the Copy Quick Test Page item and press ☑ .
14. After the quick test page copies, scroll to ADF Backside, and press ☑ .
15. Scroll to Horizontal Adjust, and press ☑ .

16. Use the ◀ or ▶ to increase or decrease the settings value.
    Note: Each button press moves the margin values one pixel in the respective direction.
17. Press ☑ to accept the value.
18. Scroll to Top Edge, and press ☑ .
19. Use the ◀ or ▶ to increase or decrease the settings value.

Note: Pressing ◀ moves the margin up, and pressing ▶ moves the margin down.

20. Press ☑ to accept the value.

To manually register the flatbed, perform the following steps:

1. In the Configuration Menu, scroll to the Scanner Manual Registration menu item.
2. Press ☑ .
3. Scroll to the Print Quick Test Page menu item.
4. Press ☑ .
5. To view and adjust the flatbed registration, place the quick test page into the flatbed, scroll to the Copy Quick Test Page item, and press ☑ .
6. After the quick test page copies, scroll to Flatbed, and press ☑ .
7. Scroll toLeft Edge, and press ☑ .
8. Use the ◀ or ▶ to increase or decrease the settings value.

Note: Each button press moves the margin values one pixel in the respective direction.

9. Press ☑ to accept the value.
10. Scroll to Top Edge, and press ☑ .
11. Use the ◀ or ▶ to increase or decrease the settings value.

Note: Pressing ◀ moves the margin up, and pressing ▶ moves the margin down.

12. Press ☑ to accept the value.

To exit RESGISTRATION press **BACK** ↩ or **STOP** ⊗.

Disable Scanner

This menu item is used to disable the MFP scanner if it is malfunctioning. The MFP must be powered off and on for the new settings to take effect. To change the setting, perform the following steps:

1. In the configuration menu, use the arrow keys to scroll to the Disable Scanner menu item.
2. Press ☑ .
3. Use the arrow key to scroll to the desired setting. The options are Enable ADF/FB, Disable ADF/FB, Disable ADF only, Auto Disabled.
4. Press ☑ .
5. Press **BACK** ↩ **.**
6. Scroll to **Exit Config Menu.**
7. Press ☑ . The device restarts.

Font Sharpening

This setting is used to set a text point size value below which the high frequency screens will be used when printing data. This setting affects only PCL, PostScript and PDF emulators.

Settings are in the range of 0–150 (24 is the default). For example, if the value is set to 24, then all fonts sized 24 points or less use the high frequency screens.

To adjust the Font Sharpening setting, perform the following steps:

1. In the configuration menu, scroll to the Font Sharpening menu item and press ☑ .
2. Use the ◀ or ▶ to increase or decrease the settings value. pressing ◀ decreases the value and pressing ▶ increases the value.
3. press ☑ to accept the setting.

Pel Blurring

The Pel Blurring setting is used if step artifacts are noticed by the customer on copies and scans. When set to On, Pel Blurring smooths out the artifacts to produce a higher quality image.

To change the setting, perform the following steps:

1. In the Configuration menu, use the arrow keys to scroll to the Pel Blurring menu item.
2. press ☑ .
3. press ◀ or ▶ to select the desired setting.
4. press ☑ to accept the change.
5. press ↩ to exit the Pel Blurring menu item.
6. Scroll to Exit Config menu.
7. press ☑ . The device restarts.

Exit Config Menu

With the Exit Config menu item displayed, press **Select** (☑) to exit the Configuration Menu. The printer performs a power-on reset and returns to normal mode.

SE Menu

Note: This is not the Fax SE menu. To enter the Fax SE menu, press **411 from the Ready screen.

Note: This menu should be used as directed by second-level support.

Print SE Menus

General

Copyright - Displays copyright information.
Optra Forms mode - On or off

Code Revision Info

Network Code Level - Displays network code level
Network Compile Info - Displays compile information
Printer Code Level - Displays printer code information
Printer Compile Info - Displays compile information

History

Print History
Mark History
History Mode

MAC

Set Card Speed
LAA
Keep Alive

NVRAM

Dump NVRAM
Re-init NVRAM

NPAP

Print Alerts

TCP/IP

netstat -r
arp -a
Allow SNMP Set
MTU
Meditech Mode
Raw LPR Mode
Gather Debug
Enable Debug

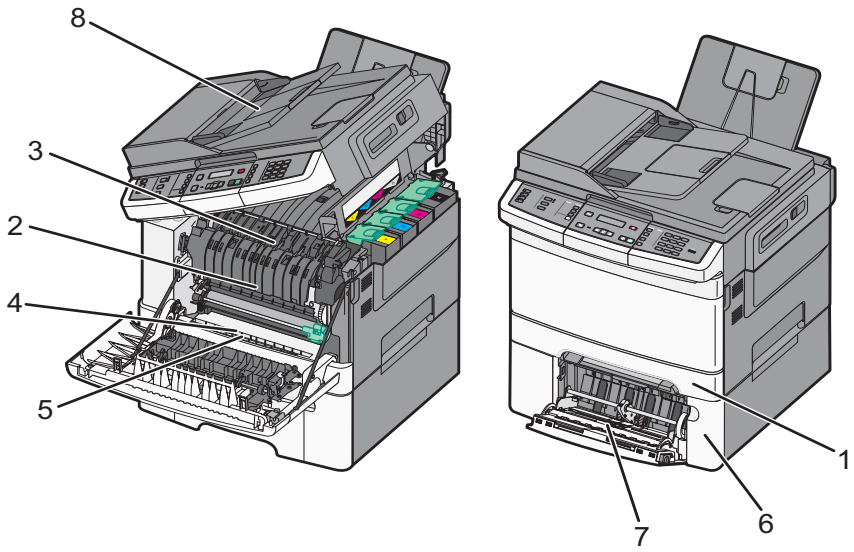
Paper jams

Avoiding jams

The following hints can help you avoid jams:

- Use only recommended paper or specialty media.
  For more information, see the *Card Stock & Label Guide* available on the Lexmark Web site at **www.lexmark.com/publications**.
- Do not load too much paper. Make sure the stack height does not exceed the indicated maximum height.
- Do not load wrinkled, creased, damp, or curled paper.
- Flex, fan, and straighten paper before loading it.
- Do not use paper that has been cut or trimmed by hand.
- Do not mix paper sizes, weights, or types in the same stack.
- Store the paper in an appropriate environment.
- Do not remove trays while the printer is printing. Wait for Load tray <x> or Ready to appear before removing a tray.
- Do not load the manual feeder while the printer is printing. Wait for Load Manual feeder with <x> to appear.
- Push all trays in firmly after loading paper.
- Make sure the guides in the trays are properly positioned, and are not pressing too tightly against the paper.
- Make sure all paper sizes and paper types are set correctly in the operator panel menu.
- Make sure all printer cables are attached correctly.

Understanding jam numbers and locations

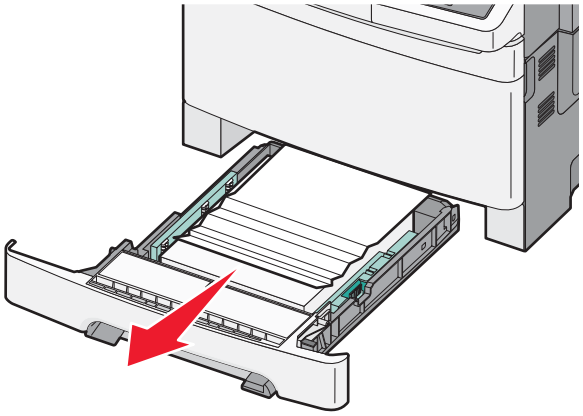


When a jam occurs, a message indicating the jam location appears. The following illustration and table list the paper jams that can occur and the location of each jam. Open doors and covers, and remove trays to access jam locations.

#	Error message	Jam message	Instructions	Go to page
1	200	Standard 250-sheet tray and manual feeder (tray 1)	Pull tray 1 out, and remove the jam.	3-41
2	201	Jam under the fuser	Open the front door, and remove the jam.	3-41
3	202	Jam in the fuser	Open the front door, and pull the fuser cover toward you. Remove the jam.	3-42
4	230	Jam in the duplex	Open the front door, and remove the jam.	3-43
5	235	Media not supported in the duplex	Load the tray with the correct paper size.	3-43
6	24x	650-sheet Duo Drawer (tray 2) /MP feeder	Pull tray 2 out, and remove the jam.	3-43
7	250	Jam in the multipurpose feeder	Pull tray 2 out, and remove the jam.	3-43
8	29x	Jams in the ADF unit	Remove the jam from the top or bottom of the ADF unit.	3-44

200 paper jams

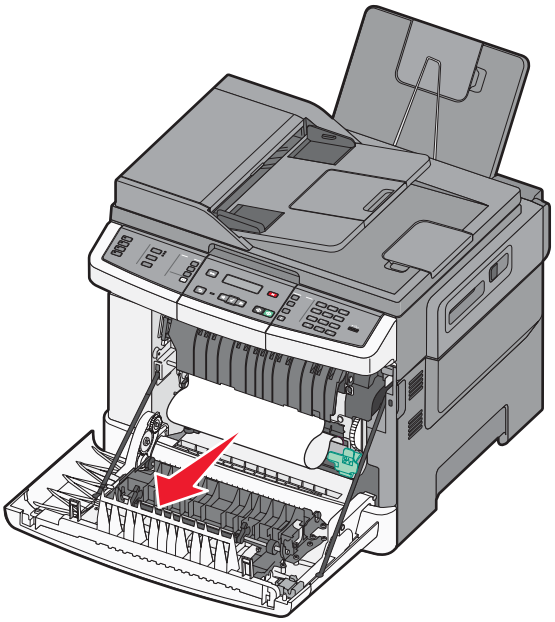
1. Remove the standard 250-sheet tray (tray 1).
2. Remove the jam.
   Note: Make sure all paper fragments are removed.



3. Insert the tray.
4. press **Select** (☑).

201 paper jam

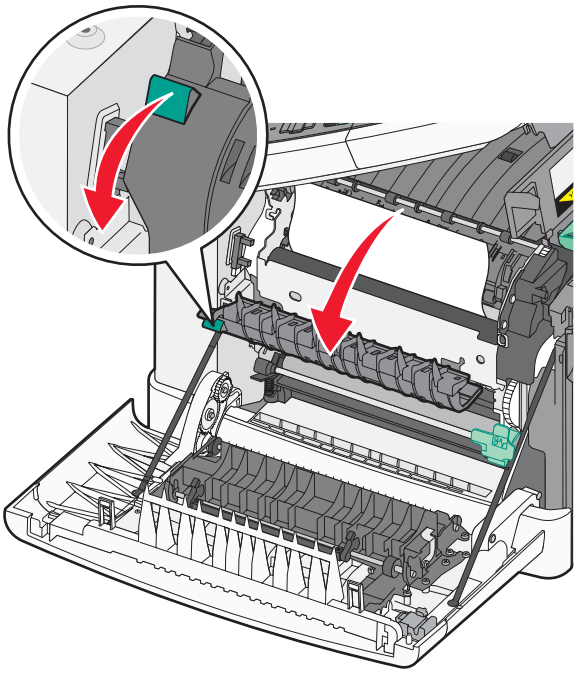
1. Grasp the front door at the side handholds, and then pull it toward you to open it.
2. Remove the jammed paper.
   Note: Make sure all paper fragments are removed.



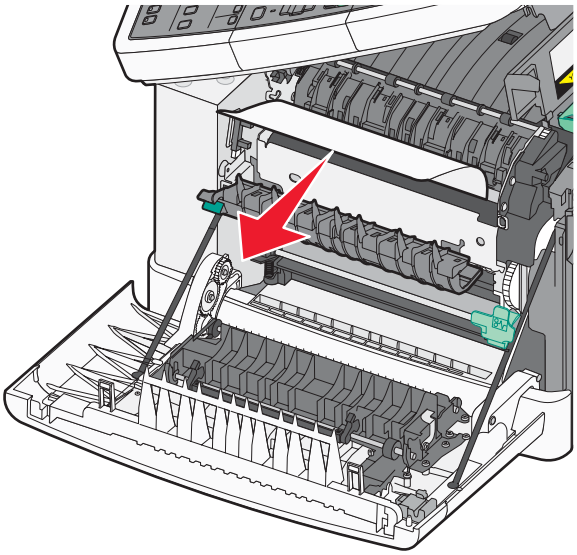
3. Close the top door.
4. press **Select** (☑).

202 paper jam

1. Raise the scanner assembly to the up position.
2. Grasp the front door at the side handholds, and then pull it toward you to open it.
3. Grasp the green lever, and pull the fuser cover toward you.



4. Hold the fuser cover down, and then remove the jammed paper.
   The fuser cover closes when released.



5. Close the fuser cover.
6. Close the front door.
7. press **Select** (☑) to continue.

230 paper jam

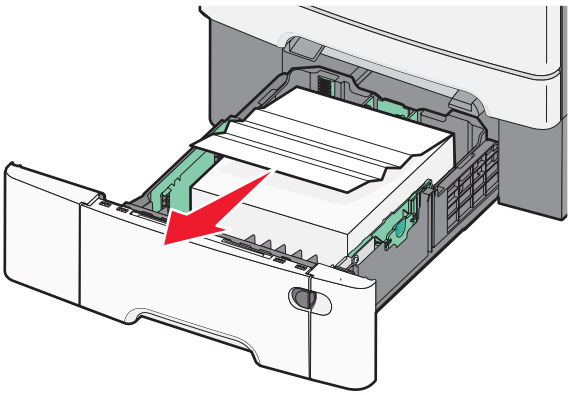
1. Grasp the front door at the side handholds, and pull it toward you to open it.
2. Remove the jam.
3. press **Select** (☑) to continue printing.

235 paper jam

1. Load the tray with the correct paper size.
2. Insert the tray.
3. Close the front door.
4. press **Select** (☑) to continue printing.

24x paper jam

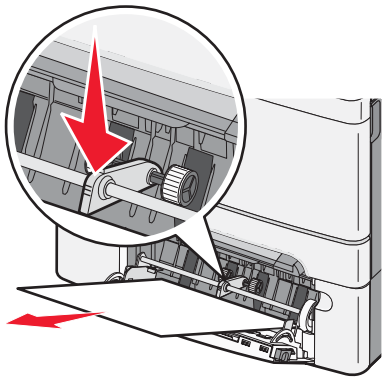
1. Remove the 650-sheet Duo Drawer (tray 2) out.
2. Remove the jam.
   Note: Make sure all paper fragments are removed.



3. Align the tray, and insert it.
4. press **Select** (☑) to continue.

250 paper jam

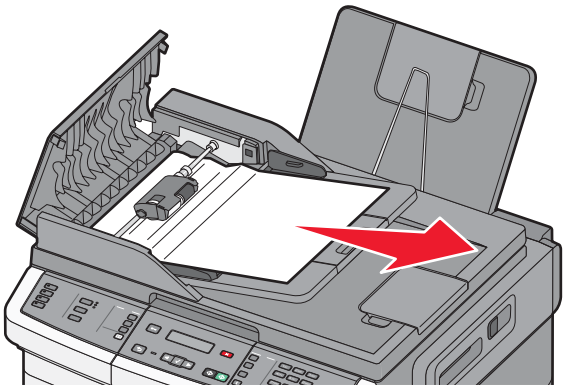
1. Push the lever to remove the media jam in the multipurpose feeder.
   Note: Make sure all paper fragments are removed.



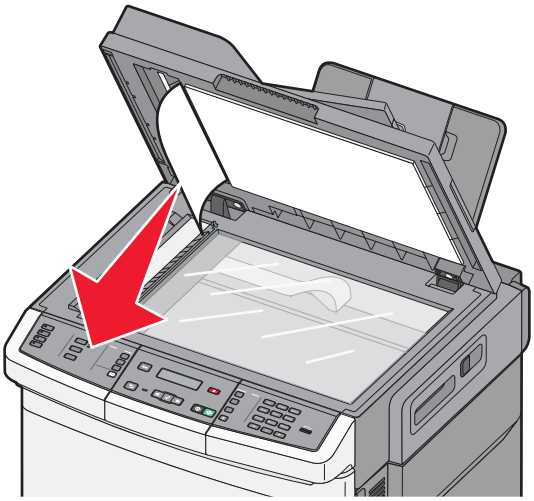
2. press **Select** (☑).

29x ADF paper jam

1. Remove all original documents from the ADF input tray.
2. Open the ADF top cover. Remove the jammed paper.



3. Close the ADF cover.
4. Open the flatbed cover. Remove any jammed pages.

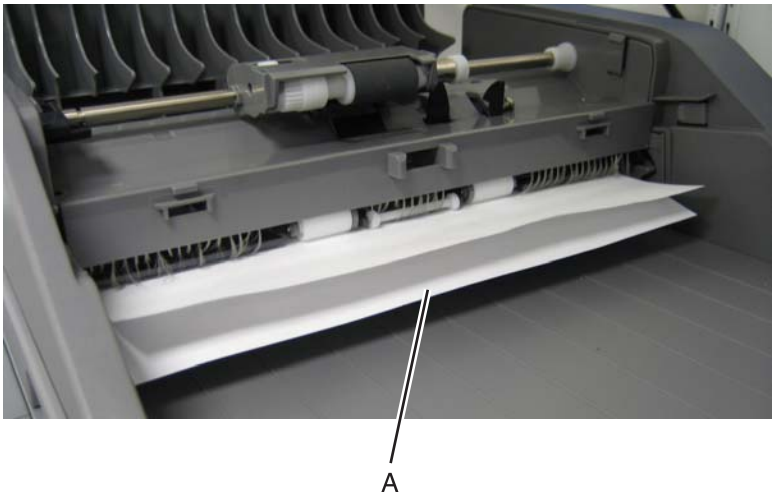


5. Close the scanner lid.
6. Press ✓.

291.xx ADF paper jams

1. Remove all original documents from the ADF input tray.
2. Remove the ADF input tray. See **“ADF input tray” on page 4-64**.

3. Remove the original from the ADF by pulling the lower of the two sheets (A) from the ADF exit.



4. Replace the ADF input tray.

Theory of operation

Print engine theory

Electrophotographic Process (EP Process)

The method that all laser and LED printers use to print is called the electrophotographic process. These machines use differences in charge to manipulate and move toner from the toner cartridge to the printed page.

Even though the basic EP process is the same for every laser and LED printer, the specifics for each printer are different. We will discuss the X54x series print engine and its particular method of printing.

MFP electrophotographic process basics

These MFPs are single-laser MFPs that use four toner cartridges (cyan, yellow, magenta, and black) to create text and images on media.

The MFP has four photoconductors (called a photodeveloper cartridge or PC unit) and an image transfer unit (ITU). Each color toner is painted to it's respective photoconductor at the same time. The transfer belt passes under the four photoconductors and the four-color image is produced and transferred to the media in one pass.

During the printing process, the MFP follows the six basic EP Process steps to create its output to the page. These six steps are:

1. Charge the photoconductor (PC unit).
2. Expose the photoconductor (PC unit) with the laser.
3. Develop toner on the photoconductor (PC unit).
4. First transfer to the ITU, and second transfer to the media.
5. Fuse the toner to the media.
6. Clean/erase the photoconductor and the ITU.

In summary, the printer's controller board receives print data and the command to print. The controller board then initiates the print process. The controller board is the command center for the EP process and coordinates the various motors and signals.

The high-voltage power supply sends charge to various components in the EP process. The laser fires on the photoconductors and alters the surface charge relative to the planed image for each photoconductor. Each photoconductor rotates past its respective developer roll, and toner is developed on the surface of each photoconductor. The four separate color images are then transferred to the transfer belt on the ITU as it passes under the photoconductors. After the image is transferred to the transfer belt, the photoconductors are cleaned and recharged.

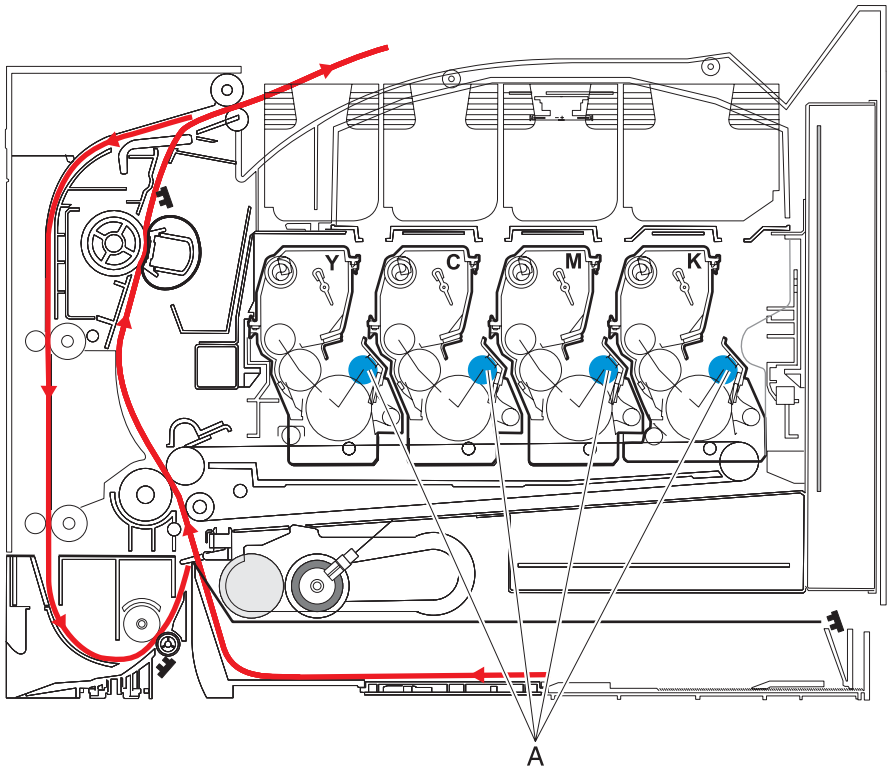
The transfer belt carries the four-colored image towards the transfer roll. Media is picked up from the tray and carried to the transfer roll where the image is transferred from the transfer belt to the media. The timing of the paper pick is determined by the speed of the transfer belt.

The media is carried to the fuser rollers where heat and pressure are applied to the page to permanently bond the toner to the page. The fuser rollers push the media into the output bin. The transfer unit is cleaned and the process begins again for the next page.

Step 1: Charge

During the charge step, voltage is sent from the high-voltage power supply to the charge roller (A) beside each of the four photoconductors. The charge roller is part of the photoconductor unit.

The charge roller (A) puts a uniform negative charge over the entire surface of the photoconductor to prepare it for the laser beam.



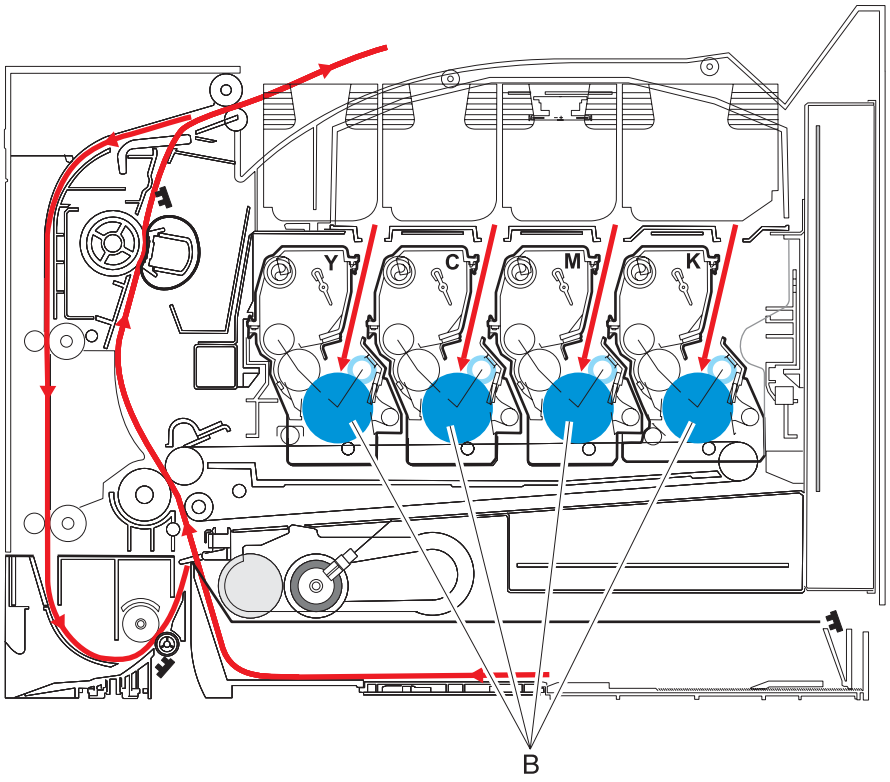
Service tips

- If the surface of the charge roller is damaged (such as a nick or pit), it will cause the charge to be uneven on the photoconductor. This will cause a repeating mark on the printed page. Check the service manual for the repeating marks table.
- If the charge roller is severely damaged, the surface of the photoconductor will not be charged properly, and heavy amounts of toner will be deposited on the photoconductor. This will cause the printed page to be saturated with 100% of each color. The imaging basket will need to be replaced sooner.

Step 2: Expose

During the expose step, the laser fires a focused beam of light at the surface of each photoconductor (B) and writes an invisible image called a latent image or electrostatic image for each color.

The laser beam actually discharges the surface only where the beam hits the photoconductor. This creates a difference in charge potential between the exposed area and the rest of the photoconductor surface.



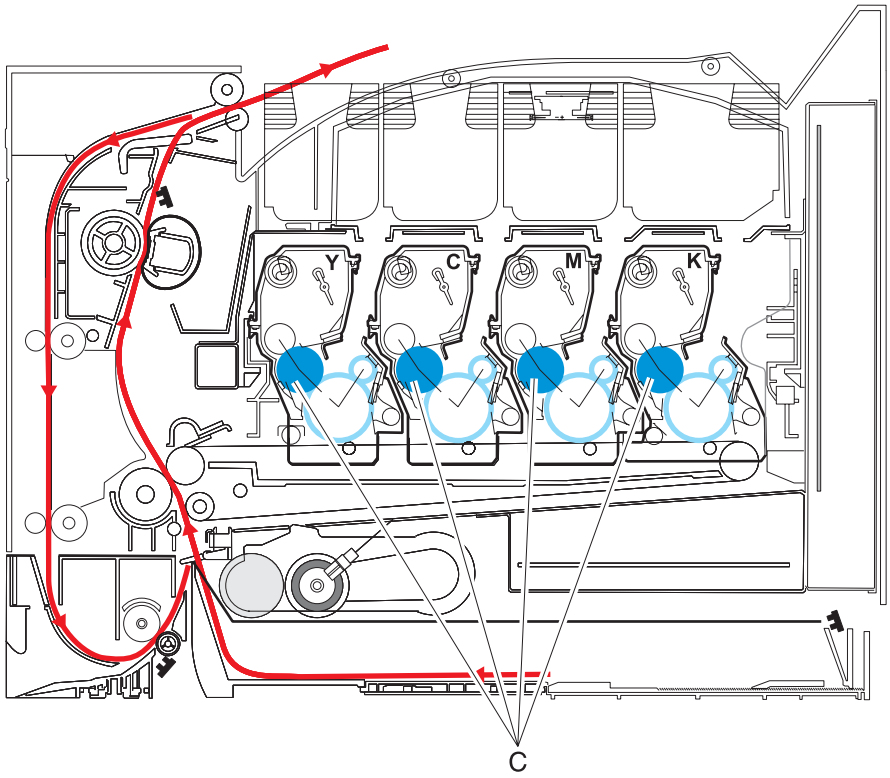
Service tips

- The laser beam passes through a glass lens as it exits the laser unit. If this lens gets contaminated with toner or other debris, it will cause vertical streaking of white/lightness on the page. Cleaning the lens will solve the problem.
- Never touch the surface of the photoconductor with your bare hand. The oil from your skin may cause a charge differential on the surface, and toner will not stick properly. The result would be repeating blotches of voids/light print on a page. Then the photoconductor will have to be replaced.
- The surface of the photoconductor is coated with an organic substance that makes it sensitive to light. Be sure and cover the photoconductor when you are working on the printer so you don't "burn" it. If exposed to light for too long, it will cause light/dark print quality problems and have to be replaced.

Step 3: Develop

Once the laser exposes the photoconductor, the high-voltage power supply sends charge to the developer roll (C). For each color, the toner cartridge engages the photoconductor so it is in contact with the surface. Because of the charge difference between the toner on the developer roller and the electrostatic image created by the laser, the toner will attract to the photoconductor only where the laser exposed the surface.

This process would be similar to using glue to write on a can and then rolling it over glitter. The glitter sticks to the glue but won't stick to the rest of the can.



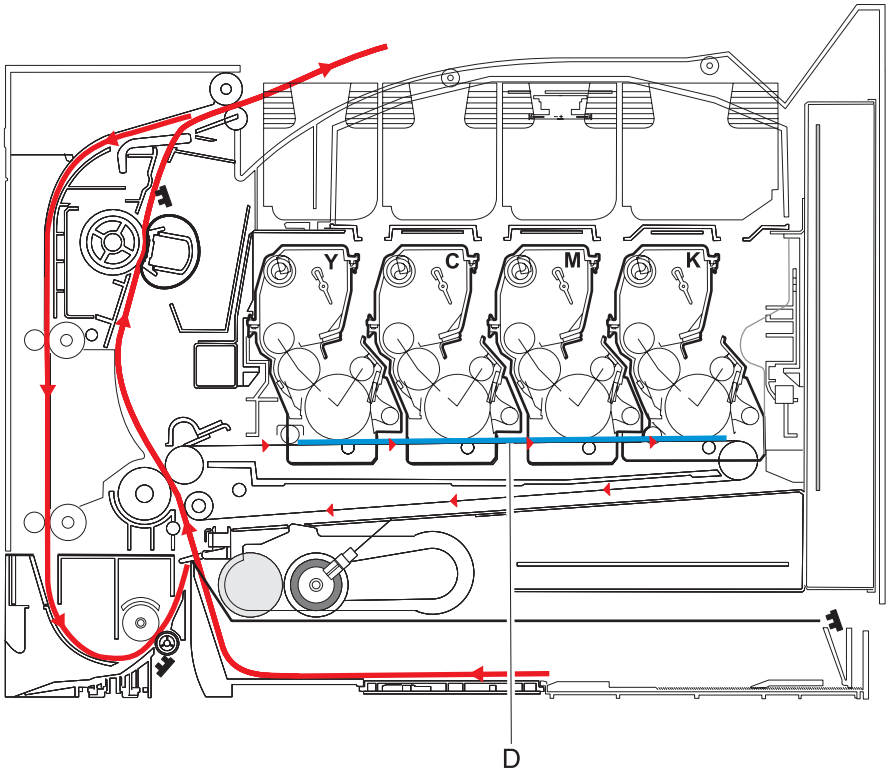
Service tips

- Never touch the surface of the developer roller with your bare hand. The oil from your skin may cause a charge differential on the surface, and toner will not stick properly. The result would be repeating blotches of voids/light print on a page. Then the affected cartridge will have to be replaced.
- If the developer roller is damaged, it will not contact the surface of the photoconductor properly. The result could be repeating marks, thin vertical voids, or thin vertical lines of color on the printed page. Check the surface of the developer for damage.

Step 4a: First transfer

When the latent images are developed on each Photoconductor, the high-voltage power supply sends voltage to the 1st Transfer Rollers inside the ITU (D).

The charge difference between the developed toner image on the Photoconductor surface and the 1st Transfer Roller causes the images to transfer to the surface of the ITU belt for each color. This takes place by a direct surface-to-surface contact between the Photoconductors and the ITU belt.



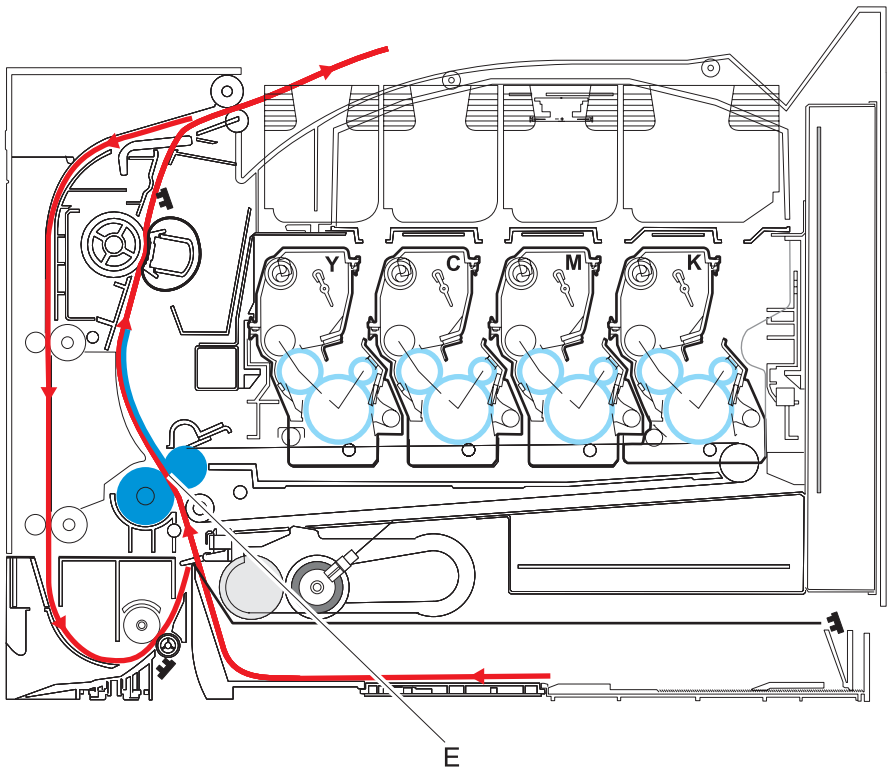
Service tips

- Never touch the surface of the ITU belt with your bare hand. The oil from your skin will cause a charge differential on the surface, and toner will not stick properly. The result would be repeating blotches of voids/light print on a page. Then the ITU belt will have to be replaced.
- Don’t use solvents or other cleaners to clean the ITU belt surface. No matter how careful you are, the surface will be compromised, causing scratches or a charge differential that will produce a void or light blotch on the printed page. Then the ITU belt will need to be replaced.

Step 4b: Second transfer

Once the four planes of color are transferred to the transfer belt from the photoconductors, the image is carried towards the transfer roll (E). This transfer roll is also part of the ITU. Based on the speed of the transfer belt, the proper time to send the signal to pick the media from an input source is determined. The timing of the pick is such that the media reaches the point where the transfer belt and transfer roll meet. The paper passes between the transfer belt and transfer roll when the image on the belt reaches the second transfer area.

The high-voltage power supply sends voltage to the transfer roll (E) to create a positive charge. Once the image on the transfer belt reaches the transfer roll, the negatively charged toner clings to the media and the entire image is transferred from the transfer belt to the media.



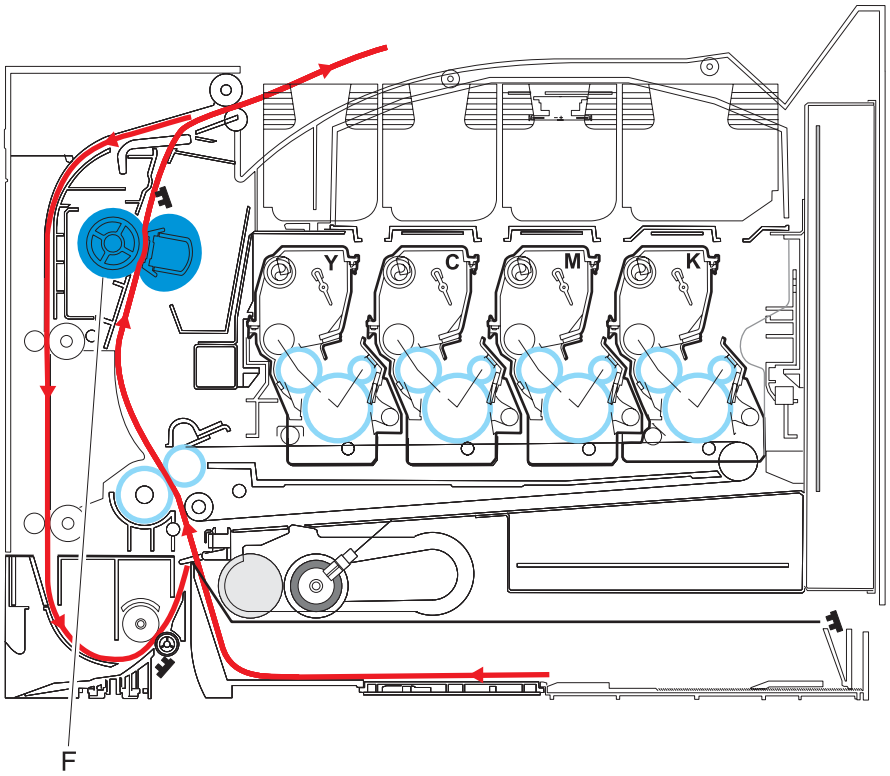
Service tips

- If the transfer roller has nicks, pits, or flat spots on it, the surface doesn't come into contact with the media and transfer unit properly. This will cause voids or light spots on the page or repeating voids/ light areas, because the toner can't be fully transferred due to the charge difference in the areas of damage.
- If the transfer roller does not engage the transfer unit, or does not have voltage coming from the high-voltage power supply, the toner will not fully transfer from the transfer unit; the entire page will be very light or blank. Any toner that does transfer will be due to a "contact" transfer instead of a "charge" transfer. Check the high-voltage power supply contacts to the transfer roller.

Step 5: Fuse

Once the image has been fully transferred to the media, the transfer roll helps move the paper into the fuser area.

The fuser (F) applies heat and pressure to the page to melt the tiny toner particles and bond them permanently to the media. The fuser moves the paper to the redrive rolls which move the paper to the output bin.



Service tips

- If the fuser rollers are damaged, they can cause toner to be pulled off the page or cause paper jams.
- Toner that rubs off a printed page can be a sign of a malfunctioning fuser or an improper media setting. Always check the paper type setting before replacing the fuser. A common mistake is to print on heavier media (such as cardstock) with the paper type set to plain paper.
- When removing paper jams from the fuser, be sure to use the fuser release tabs to relieve the pressure on the page. In addition, never pull unfused toner through the fuser if you can help it; try to back the jammed page out of the fuser in the opposite direction it was travelling.

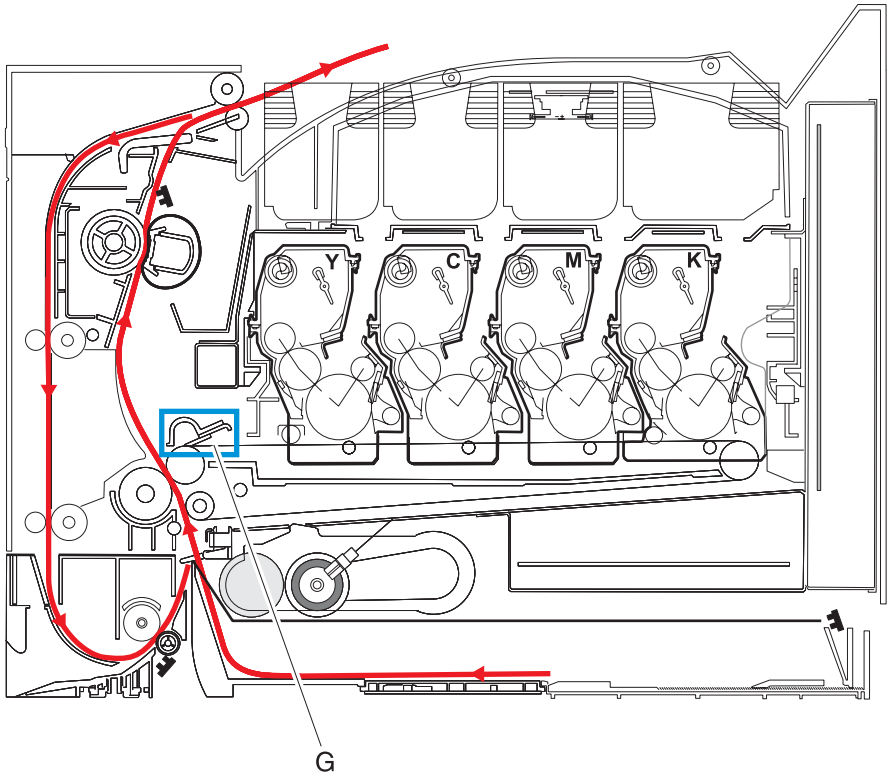
Step 6: Clean/Erase

There are two main cleaning processes that take place during the EP Process. One process cleans the transfer belt, and the other cleans the photoconductors.

Transfer Unit Clean

Once the toner image on the transfer belt has been transferred to the page, the transfer belt rotates around and is cleaned by the cleaning blade (G). This occurs for every page that is printed.

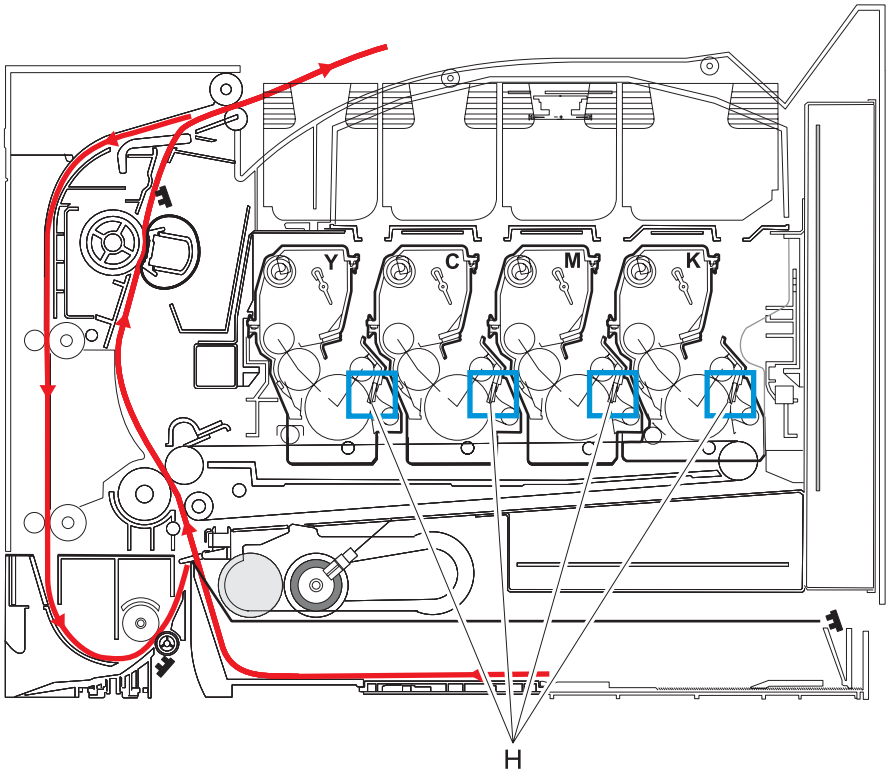
After the toner is moved to the cleaning blade, the toner is moved from the cleaning blade (G) to the waste toner area using an auger system.



Photoconductor Clean/Erase

After each plane of color has been transferred to the transfer belt from the photoconductors, a cleaning blade (H) scrapes the remaining toner from the surface of each photoconductor. This is the clean/erase process.

Now the photoconductor surface is prepared to begin the EP cycle once again. This cleaning/erasing cycle happens after each plane of color is transferred to the transfer belt.



Paper path, transport components

In order for an image to be printed, the media has to be moved from an input source (such as a tray) into the printer and eventually exit into an output source.

The most important component in this process is this media itself. Old, damaged, or out-of-specification media can and will cause feed and transport problems. If you encounter problems, you should always check the media first **“Media guidelines” on page 1-13**. In addition, it is always good practice to check the printer and driver settings to see if the media being used matches the user’s settings. It is not uncommon to find a user printing on cardstock with the printer programmed to print on a plain paper setting.

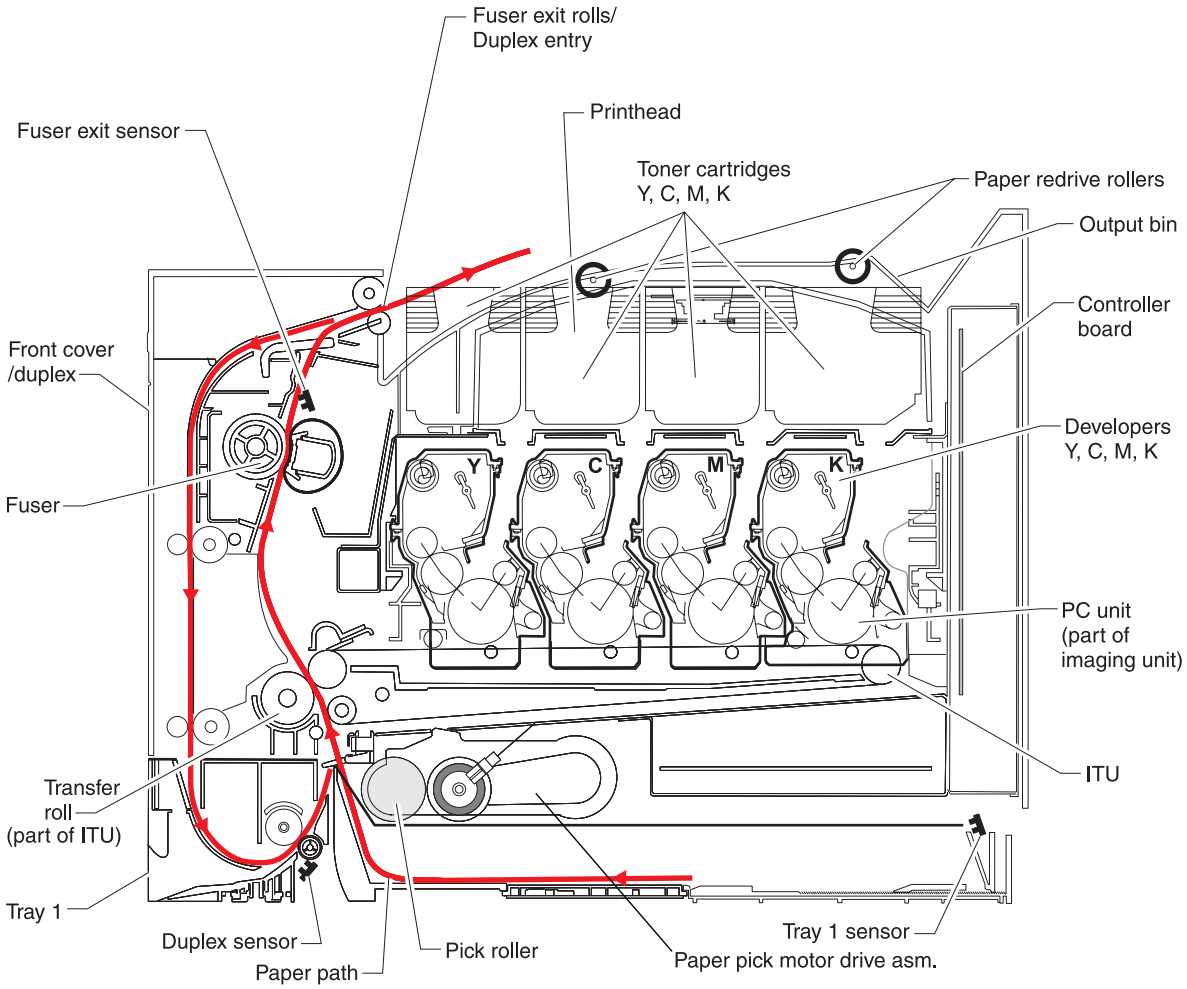
The printer’s feed and transport components can fail and cause paper jams or other feed and transport problems. These components should be examined for damage or wear and replaced if necessary.

Below is a summary of the paperpath, and transport components.

Paper path Information

The MFP has a simple “C” shaped paper path (see the picture below). The paper paths are shown in red. Paper is fed from the bottom of the printer from the paper tray, or manual feed, and travels upward through the front cover.

There is a duplex unit on this MFP. The duplex unit is built into the front cover and drawer 1. Duplexing is described later.



Transport components

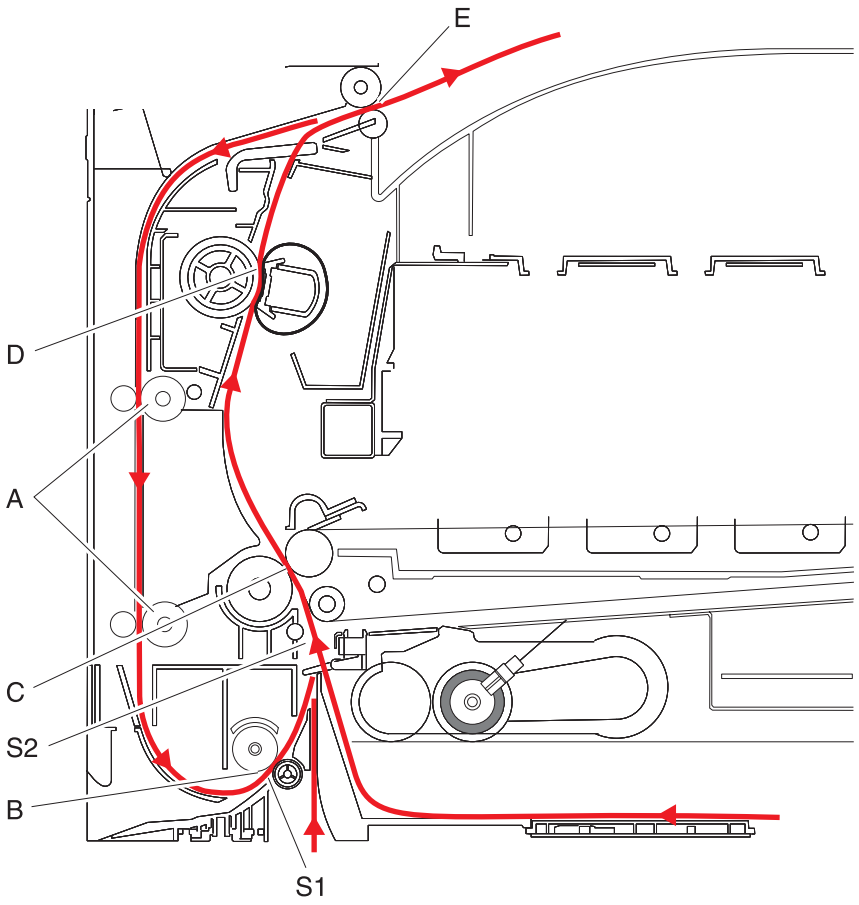
In summary, the media is fed from the tray into the printer by a feed roll and carried to the transfer roll (ITU). The pick rollers time the media to enter the EP process at just the right moment.

The pick rollers push the media to the ITU where the image is transferred to the page.

The transfer roller moves the media to the fuser where heat and pressure are applied to the page. The fuser rollers push the media toward the exit bin and past the exit sensor. The exit rollers guide the paper into the output bin.

Note: If the printer posts a paper jam message but no paper is found, paper dust or paper particles may have fallen in one of the sensor eyes. Use a can of compressed air to gently clean the sensor.

Duplexing (models with duplex support only)



The MFPs with duplex support use a secondary paper path in the front cover and the 250-sheet paper tray to print on the second side of a sheet of paper. The following steps summarize the duplexing process.

After the first side of the media is printed and the trailing edge of the paper clears the fuser exit sensor, the fuser motor reverses. The reversed motor pulls the media into the duplexer paper path. In addition to the fuser motor reversing, the pick motor also reverses. The pick motor drives the duplex aligner rolls (A) which push the media down to the bottom turnaround in the paper tray and gate aligner (B).

Note: While the sheet is being transported through the front door and paper tray, it is the only piece of media being processed by the print engine. A user should not attempt to insert a piece of media into the manual paper feed while a duplex job is being processed. This would invoke a paper jam error.

When the trailing edge of the media clears the fuser, the fuser engine rotates forward to prepare the fuser for the page travelling through the duplexer.

As the media reaches the gate aligner, a sensor (S1) is triggered indicating the presence of the leading edge.

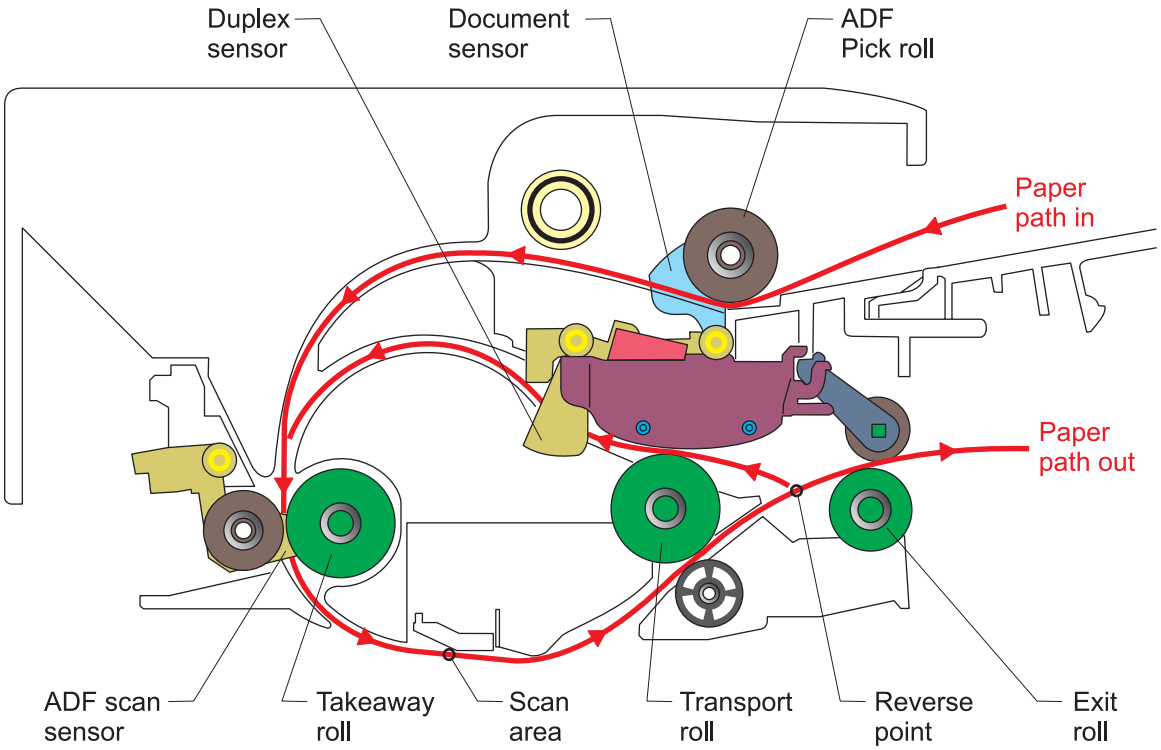
When the S1 sensor is triggered, the paper continues to the S2 sensor. When the S2 signal is detected, the speed of the paper is adjusted to accommodate the speed of the transfer belt, ensuring the proper registration of the image on the media. The paper travels to the ITU (C) and the second image is transferred to the reverse side of the media.

Once the imaged is transferred, the media travels to the fuser (D), the fuser exit rolls (E), and the output bin.

Scanner theory

Duplex ADF

The following illustration shows the paperpath, rollers and sensors used in the X544 duplex ADF.



The X544 duplex ADF enables the user to create duplex scans automatically, eliminating the need to stop the scanning process to flip the media being duplicated over. The ADF uses a step motor, and a series of sensors to determine the media's position in the paper path during the scan process.

The following steps are performed in creating a duplex scan on the X544 duplex ADF.

1. The scanner control unit, on the controller board receives a command to create a scan, fax, or copy.

2. A signal is sent to the ADF to poll the paper present sensor to check if the media to be scanned is in the correct position. The media must be placed in the ADF input tray so it actuates the paper present sensor. If the ADF paper present sensor isn't actuated, a flatbed scan is run by default.

3. If the media has actuated the paper present sensor, an ADF scan is executed. At this point the roller on the pick arm assembly drops and advances the paper into the ADF, actuating the document sensor. Actuating this sensor determines that this will be the first side of the document to be scanned.

4. When the document sensor is actuated, a signal is sent to flatbed to move the CCD imaging unit to the ADF scan area. When the CCD reaches the ADF scan area, a calibration is performed on the CCD.

5. The media is advanced to ADF scan sensor which is located by the takeaway roll. If the paper does not reach the ADF scan sensor in a predetermined length of time a jam error will be generated.

6. When the ADF scan sensor is actuated the paper advances to the scan area. While the paper is advancing to the scan area, the ADF motor generates pulses which are stored in an on-board counter. These counts along

with the ADF scan sensor ensure that the media is travelling at the correct speed through the scan area. The speed the document travels through the ADF scan area is dependent on the image DPI specified by the user.

7. After a predetermined number of counts, the media reaches the scan area and the image acquisition process is initiated. While the image acquisition process is executing, the ADF scan sensor is being polled to determine if the trailing edge of the media has reached the sensor.

8. Once the trailing edge of the scan media has reached the ADF scan sensor, that sensor goes to the off position. After the ADF scan sensor is switched off, the image acquisition process continues for a predetermined length of time.

9. When the image acquisition process is completed, the trailing edge of the media continues to the reverse point. If the scan job is simplex, only the media continues to the exit roller and exits the ADF.

10. If the scan job is a duplex scan job, a solenoid on the ADF is actuated when the trailing edge of the media reaches the reverse point. This solenoid moves a diverter gate to the down position and engages a reversing gear on the exit roll.

11. The reversed exit roll pulls the paper back into the ADF. The transport roll then moves the media to the duplex sensor. When the duplex sensor is actuated, the exit roll stops. Also, the duplex sensor indicates that this is the second side of the media to be scanned.

12. After actuating the duplex sensor, the transport roll moves the media to the take away roll and the ADF scan sensor. Like the first pass of the media, the image acquisition process is repeated for the second side of the media.

13. When the trailing edge of the media reaches the reverse point the second time, the solenoid again moves the diverter gate to the down position and reverses the exit roll. The paper goes back into the ADF unit for a third time. The paper passes through the paper path, but no imaging occurs. This pass is to turn the paper over to the original side up. On the third pass of the media trailing edge over the reverse point, the solenoid is not actuated and the paper passes out of the ADF.

Color theory

What is RGB color?

Red, green, and blue light can be added together in various amounts to produce a large range of colors observed in nature. For example, red and green can be combined to create yellow. Televisions and computer monitors create colors in this manner. RGB color is a method of describing colors by indicating the amount of red, green, or blue needed to produce a certain color.

What is CMYK color?

Cyan, magenta, yellow, and black inks or toners can be printed in various amounts to produce a large range of colors observed in nature. For example, cyan and yellow can be combined to create green. Printing presses, inkjet printers, and color laser printers create colors in this manner. CMYK color is a method of describing colors by indicating the amount of cyan, magenta, yellow, and black needed to reproduce a particular color.

How is color specified in a document to be printed?

Software programs typically specify document color using RGB or CMYK color combinations. Additionally, they allow users to modify the color of each object in a document. For more information, see the software program Help topics.

How does the printer know what color to print?

When a user prints a document, information describing the type and color of each object is sent to the printer. The color information is passed through color conversion tables that translate the color into the appropriate amounts of cyan, magenta, yellow, and black toner needed to produce the desired color. The object information determines the application of color conversion tables. For example, it is possible to apply one type of color conversion table to text while applying a different color conversion table to photographic images.

Should I use PostScript or PCL emulation? What settings produce the best color?

The PostScript driver is strongly recommended for best color quality. The default settings in the PostScript driver provide the preferred color quality for the majority of printouts.

Why doesn't the printed color match the color I see on the computer screen?

The color conversion tables used in Auto Color Correction mode generally approximate the colors of a standard computer monitor. However, because of technology differences that exist between printers and monitors, there are many colors that can also be affected by monitor variations and lighting conditions. For recommendations on how the printer color sample pages may be useful in solving certain color-matching problems, see **“How can I match a particular color (such as a corporate logo)?” on page 3-62**.

The printed page appears tinted. Can I adjust the color?

Sometimes a printed page may appear tinted (for example, everything printed seems to be too red). This can be caused by environmental conditions, paper type, lighting conditions, or user preference. In these instances, adjust the Color Balance setting to create a more preferable color. Color Balance provides the user with the ability to make subtle adjustments to the amount of toner being used in each color plane. Selecting positive or negative values for cyan, magenta, yellow, and black (from the Color Balance menu) will slightly increase or decrease the amount of toner used for the chosen color. For example, if a printed page has a red tint, then decreasing both magenta and yellow could potentially improve the color balance.

My color transparencies seem dark when they are projected. Is there anything I can do to improve the color?

This problem most commonly occurs when projecting transparencies with reflective overhead projectors. To obtain the highest projected color quality, transmissive overhead projectors are recommended. If a reflective projector must be used, then adjusting the Toner Darkness setting to 1, 2, or 3 will lighten the transparency. Make sure to print on the recommended type of color transparencies.

What is manual color correction?

When manual color correction is enabled, the printer employs user-selected color conversion tables to process objects. However, Color Correction must be set to Manual, or no user-defined color conversion will be implemented. Manual color correction settings are specific to the type of object being printed (text, graphics, or images), and how the color of the object is specified in the software program (RGB or CMYK combinations).

Notes:

- Manual color correction is not useful if the software program does not specify colors with RGB or CMYK combinations. It is also not effective in situations in which the software program or the computer operating system controls the adjustment of colors.
- The color conversion tables—applied to each object when Color Correction is set to Auto—generate preferred colors for the majority of documents.

To manually apply a different color conversion table:

1. press **Menu** ( ) to open the Admin menus.
2. Select **Settings**, and press **Select** ( ).
3. Select **Quality**, and press **Select** ( ).
4. Select **Color Correction**, and press **Select** ( ).
5. Select **Manual**, and press **Select** ( ).
   The printer is in manual mode, and you need to select a color conversion table.
6. press **Back** ( ) to return to the Quality menu, select **Manual Color**, and press **Select** ( ).
7. Select the appropriate color conversion table for the affected object type.

Object type	**Color conversion tables**
RGB Image RGB Text RGB Graphics	• **Vivid**—Produces brighter, more saturated colors and may be applied to all incoming color formats. • **sRGB Display**—Produces an output that approximates the colors displayed on a computer monitor. Black toner usage is optimized for printing photographs. • **Display**—**True Black**—Produces an output that approximates the colors displayed on a computer monitor. Uses only black toner to create all levels of neutral gray. • **sRGB Vivid**—Provides an increased color saturation for the sRGB Display color correction. Black usage is optimized for printing business graphics. • **Off**—No color correction is implemented.
CMYK Image CMYK Text CMYK Graphics	• **US CMYK**—Applies color correction to approximate the SWOP (Specifications for Web Offset Publishing) color output. • **Euro CMYK**—Applies color correction to approximate EuroScale color output. • **Vivid CMYK**—Increases the color saturation of the US CMYK color correction setting. • **Off**—No color correction is implemented.

How can I match a particular color (such as a corporate logo)?

From the printer Quality menu, nine types of Color Samples sets are available. These are also available from the Color Samples page of the Embedded Web Server. Selecting any sample set generates a multiple-page printout consisting of hundreds of colored boxes. Either a CMYK or RGB combination is located on each box, depending on the table selected. The observed color of each box is obtained by passing the CMYK or RGB combination labelled on the box through the selected color conversion table.

To print Color samples from the printer:

1. press **Menu** (⊶) to open the Admin menus.
2. Select **Settings**, and press **Select** (☑).
3. Select **Quality**, and press **Select** (☑).
4. Select **Color Samples**, and press **Select** (☑).
5. Select the **Color Conversion** table to print, and press **Select** (☑).

By examining Color Samples sets, a user can identify the box whose color is the closest to the desired color. The color combination labelled on the box can then be used for modifying the color of the object in a software program. For more information, see the software program Help topics. Manual color correction may be necessary to utilize the selected color conversion table for the particular object.

Selecting which Color Samples set to use for a particular color-matching problem depends on the Color Correction setting being used (Auto, Off, or Manual), the type of object being printed (text, graphics, or images), and how the color of the object is specified in the software program (RGB or CMYK combinations). When the printer Color Correction setting is set to Off, the color is based on the print job information; and no color conversion is implemented.

Note: The Color Samples pages are not useful if the software program does not specify colors with RGB or CMYK combinations. Additionally, certain situations exist in which the software program or the computer operating system adjusts the RGB or CMYK combinations specified in the program through color management. The resulting printed color may not be an exact match of the Color Samples pages.

What are detailed Color Samples and how do I access them?

Detailed Color Samples sets are available only through the Embedded Web Server of a network printer. A detailed Color Samples set contains a range of shades (displayed as colored boxes) that are similar to a user-defined RGBor CMYK value. The likeness of the colors in the set are dependent on the value entered in the RGB or CMYK Increment box.

To access a detailed Color Samples set from the Embedded Web Server:

1. Open a Web browser.
2. In the address bar, type the network printer IP address.
3. Click **Configuration**.
4. Click **Color Samples**.
5. Click **Detailed Options** to narrow the set to one color range.
6. When the Detailed Options page appears, select a color conversion table.
7. Enter the RGB or CMYK color number.
8. Enter an Increment value from 1–255.
   Note: The closer the value is to 1, the narrower the color sample range will appear.
9. Click **Print** to print the detailed Color Samples set.

4. Repair information

Warning: Read the following before handling electronic parts.

Handling ESD-sensitive parts

Many electronic products use parts that are known to be sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive parts, use the following instructions in addition to all the usual precautions, such as turning off power before removing logic boards:

- Keep the ESD-sensitive part in its original shipping container (a special “ESD bag”) until you are ready to install the part into the machine.
- Make the least-possible movements with your body to prevent an increase of static electricity from clothing fibers, carpets, and furniture.
- Put the ESD wrist strap on your wrist. Connect the wrist band to the system ground point. This discharges any static electricity in your body to the machine.
- Hold the ESD-sensitive part by its edge connector shroud (cover); do not touch its Pin. If you are removing a pluggable module, use the correct tool.
- Do not place the ESD-sensitive part on the machine cover or on a metal table; if you need to put down the ESD-sensitive part for any reason, first put it into its special bag.
- Machine covers and metal tables are electrical grounds. They increase the risk of damage because they make a discharge path from your body through the ESD-sensitive part. (Large metal objects can be discharge paths without being grounded.)
- Prevent ESD-sensitive parts from being accidentally touched by other personnel. Install machine covers when you are not working on the machine, and do not put unprotected ESD-sensitive parts on a table.
- If possible, keep all ESD-sensitive parts in a grounded metal cabinet (case).
- Be extra careful in working with ESD-sensitive parts when cold-weather heating is used, because low humidity increases static electricity.

Removal procedures

CAUTION

Remove the power cord from the electrical outlet before you connect or disconnect any cable or electronic board or assembly for personal safety and to prevent damage to the printer. Disconnect any connections between the printer and PCs/peripherals.

Notes:

- Some removal procedures require removing cable ties. You must replace cable ties during reassembly to avoid pinching wires, obstructing the paper path, or restricting mechanical movement.
- Remove the waste toner bottle, color toner cartridges, imaging unit, and media tray before removing other printer parts. The imaging unit should be carefully set on a clean, smooth, and flat surface. It should also be protected from light while out of the printer.
- Unless otherwise stated, reinstall the parts in reverse order of removal.
- When reinstalling a part held with several screws, start all screws before final tightening.

Print engine removal procedures

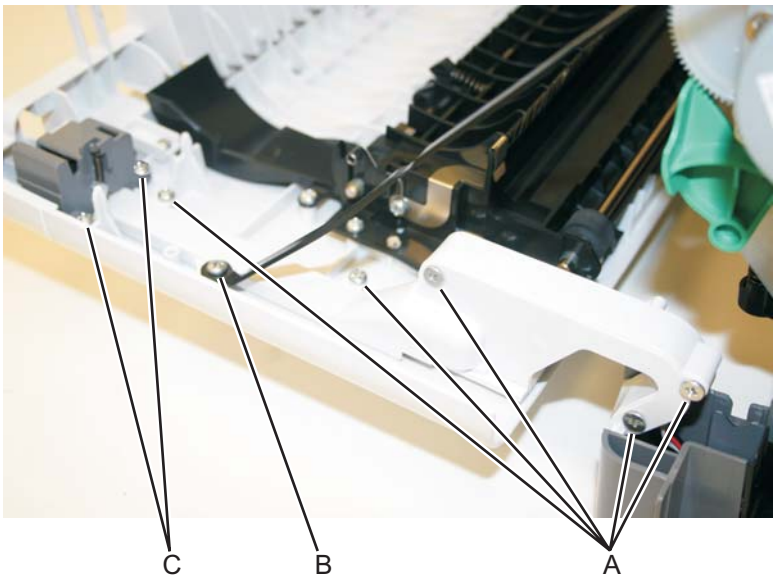
Notes:

- Remove the waste toner container, color toner cartridges, imaging unit, and media tray before removing other printer parts. The imaging unit should be carefully set on a clean, smooth, and flat surface. It should also be protected from light while out of the printer.
- We recommend disconnecting all external cables from the printer to prevent damage during service.
- Unless otherwise stated, reinstall the parts in reverse order of removal.
- When reinstalling a part held with several screws, start all screws before final tightening.

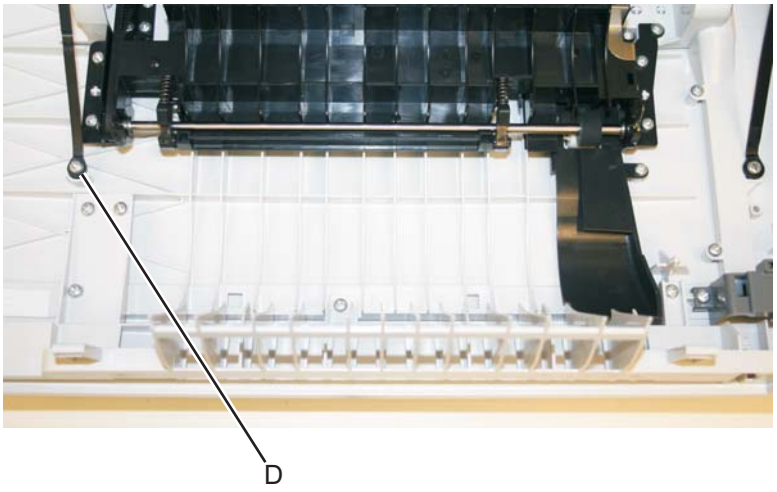
Front cover assembly removal

1. Remove the media tray.
2. Open the front cover.
3. Remove the front middle cover (optional). See **“Front middle cover removal” on page 4-4**.

4. Remove the five screws (A) from the cable cover.



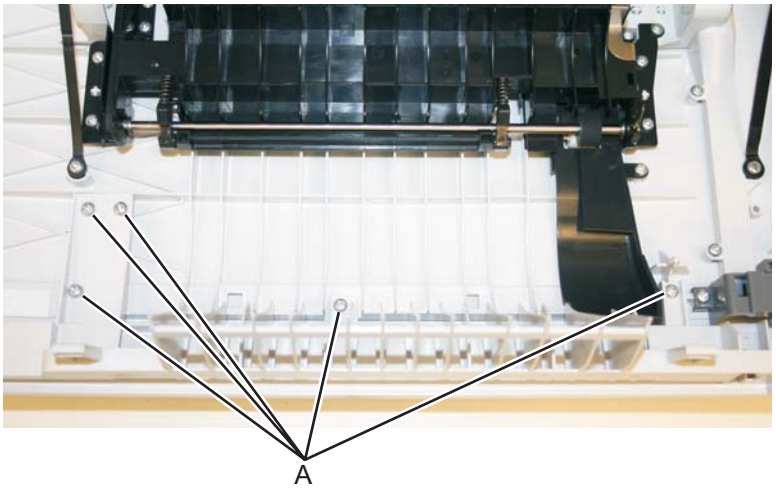
5. Remove the cable cover.
6. Remove the screw (B) securing the right restraining strap to the front cover.
   Note: Support the door with one hand after removing the screw holding the restraining strap. This is the longest screw of the eight. The two flat head Phillips screws are used in the door hinge.
7. Remove the two screws (C) securing the interlock and cable.
8. Route the cable through the right hinge.
   Note: Make a note of the interlock sensor cable routing through the right hinge and front door.
9. Remove screw (D) securing the restraining strap to the left side of the front door.



10. Lower the front cover to align the flats on the hinges, and remove the front cover.

Front middle cover removal

1. Open the front cover.
2. Remove the five screws (A) attaching the front middle cover to the lower front cover.



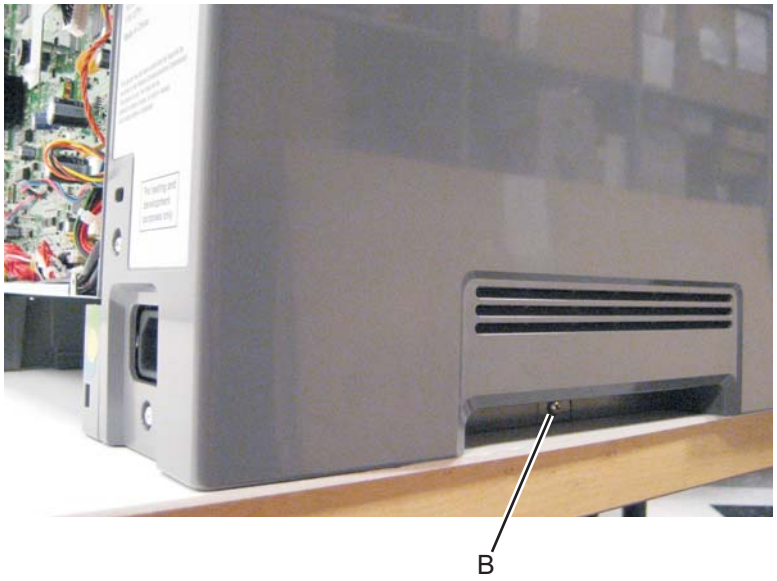
3. Pull the front middle cover away from the front cover.

Left cover removal

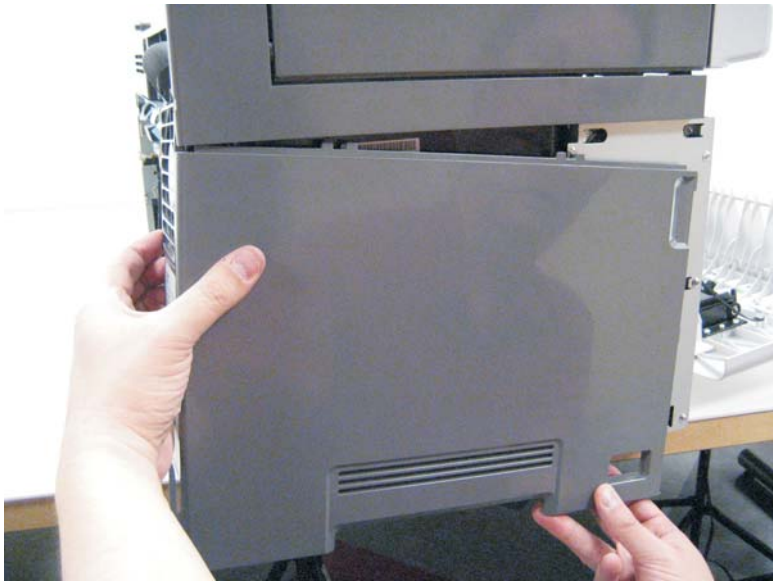
1. Remove the media tray.
2. Open the front cover.
3. Position the printer with the left side hanging over the edge of the table.

4. Remove the three screws (A) on the rear side of the left cover.

5. Remove the screw (B) on the bottom of the cover.



6. With a hand on the bottom of the cover, ease the cover over the off/on switch, and rotate the cover away from the printer.

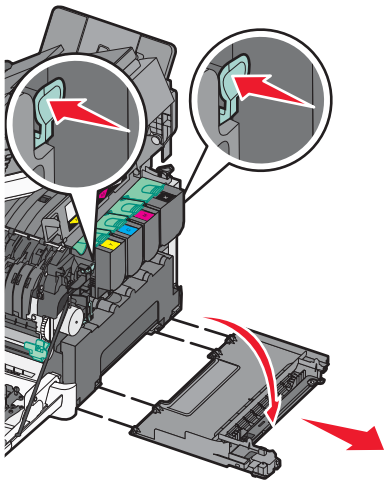


Warning: Be careful not to damage the rear tab at the upper rear side of cover.

Installation note: When replacing the left cover, flex the cover slightly to engage the tab near the power switch.

Right cover removal

1. Remove the media tray.
2. Lift and lock the flatbed assembly to the raised position.
3. Open the front cover.
4. Release the green latches securing the door.

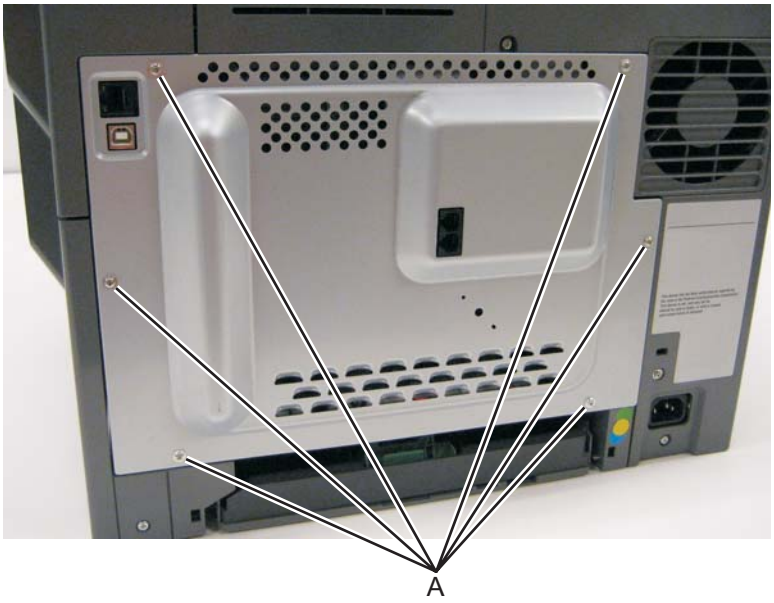


5. Lower the right cover and remove it from the hinges.

Rear shield removal

The rear shield is not a field replaceable unit (FRU).

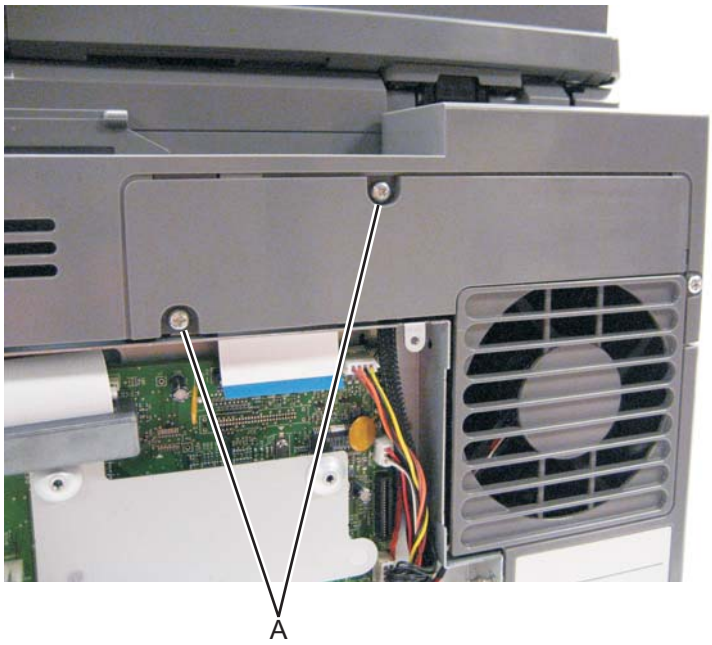
1. Remove the six screws (A).



2. Remove the rear shield.

AIO back cable cover removal

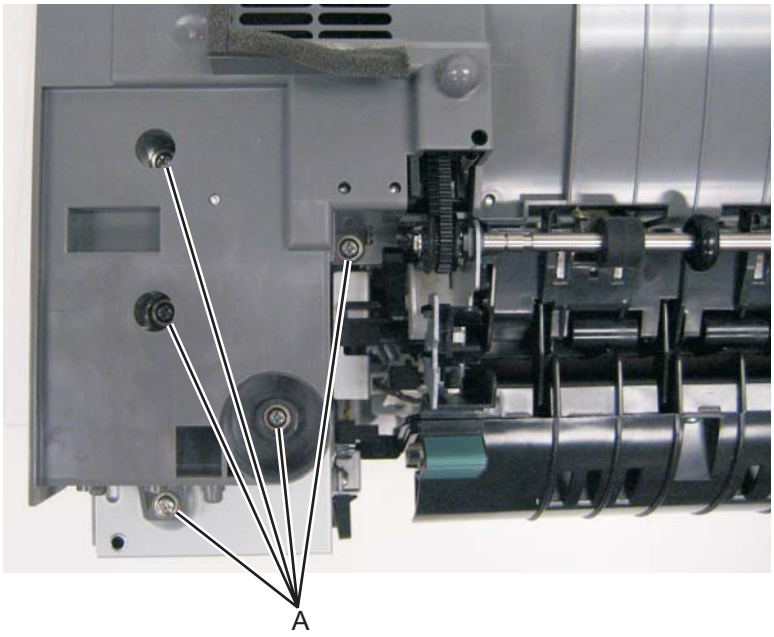
1. Remove the two screws (A) which secure the AIO back cable cover to the MFP.



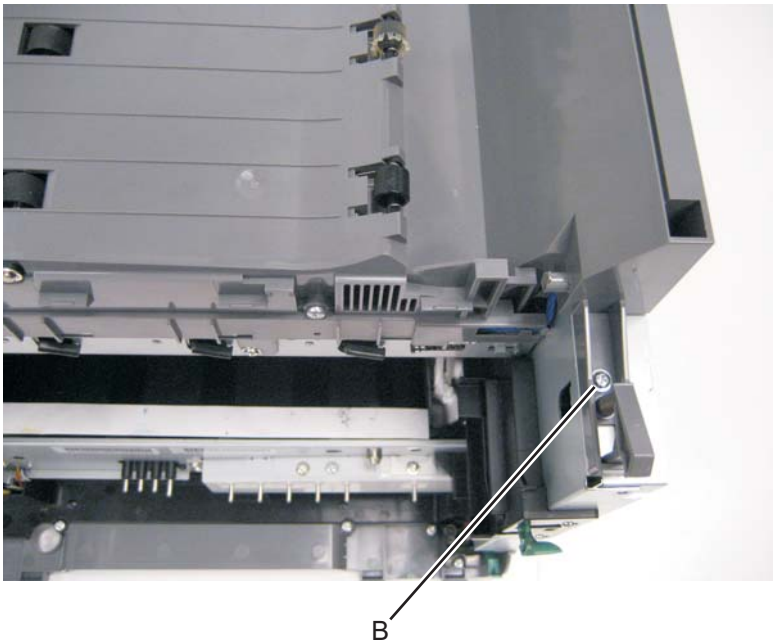
2. Place a small flat-blade screwdriver under the bottom of the cover, and gently pry the cover upward.

Top cover assembly removal

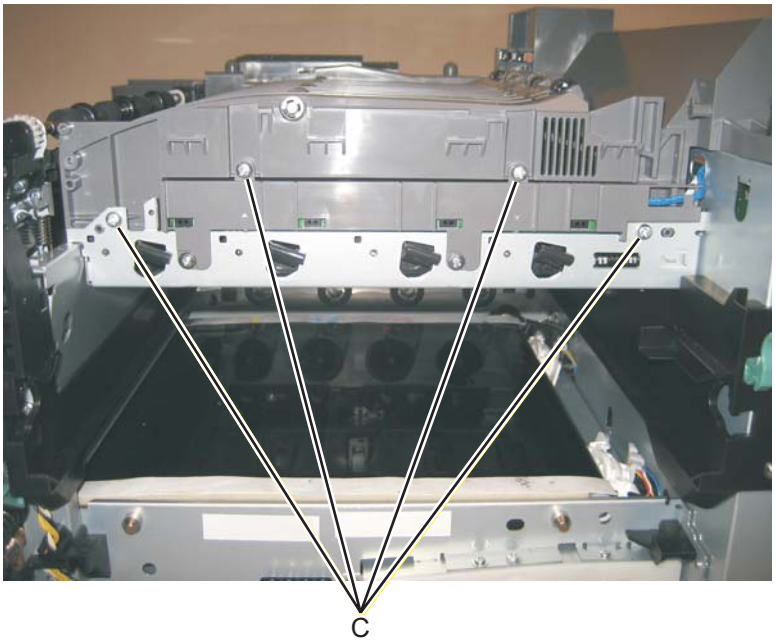
1. Remove the flatbed assembly. Go to **"Flatbed removal" on page 4-53**.
2. Remove the AIO toner cover. Go to **"AIO toner cover" on page 4-75**.
3. Remove the five screws (A) from the left front side.



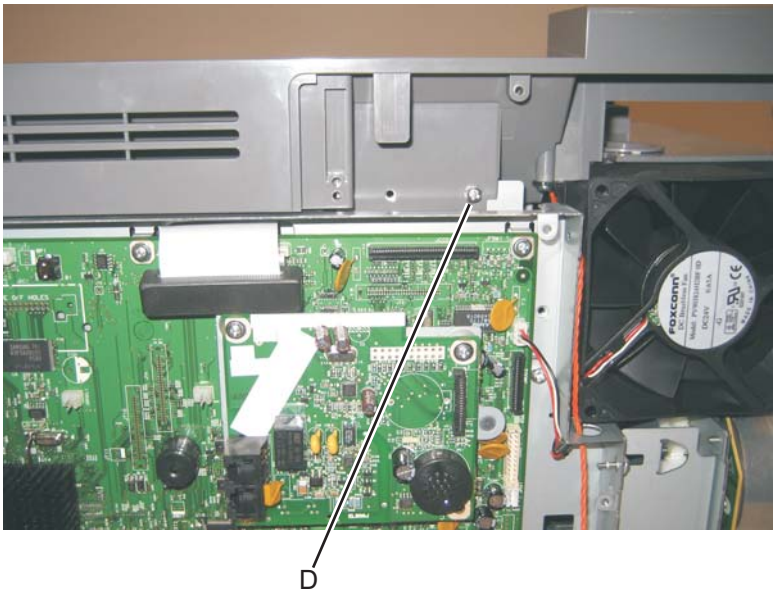
4. Remove one screw (B) from the top right side of the cover.



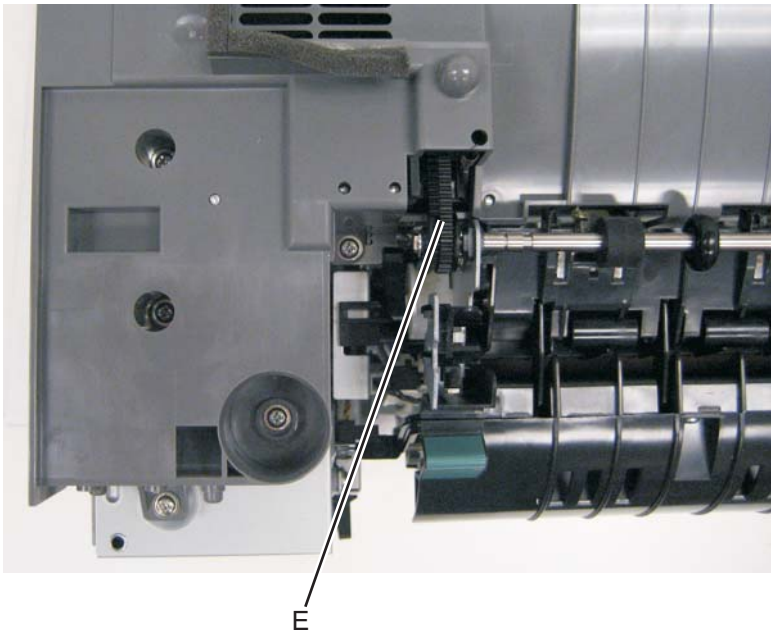
5. Remove the four screws (C) on the right side of the top cover.



6. Remove one screw (D) from the rear.



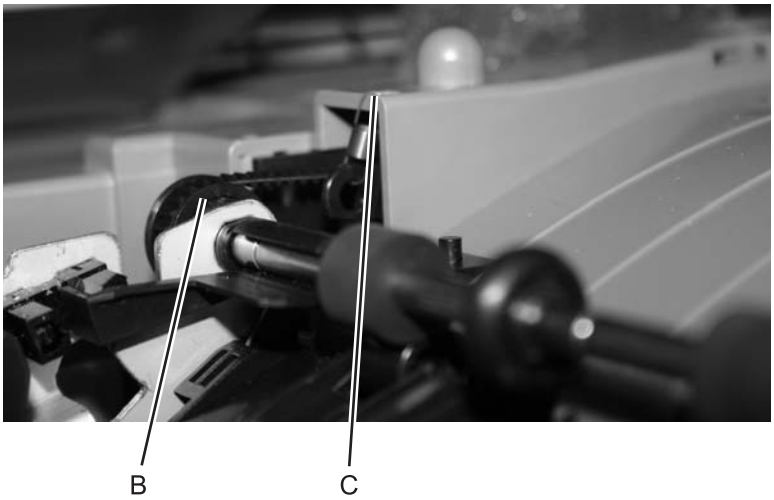
7. Detach the re-drive belt (E) from the pulley on the fuser exit roll shaft.



8. Disconnect the fan power cable from JFAN1 on the controller board.
9. Disconnect the bin full sensor cable from the controller board.
10. Remove the top cover, being careful to route the fuser exit sensor cable through the top of the controller board cage.

Installation

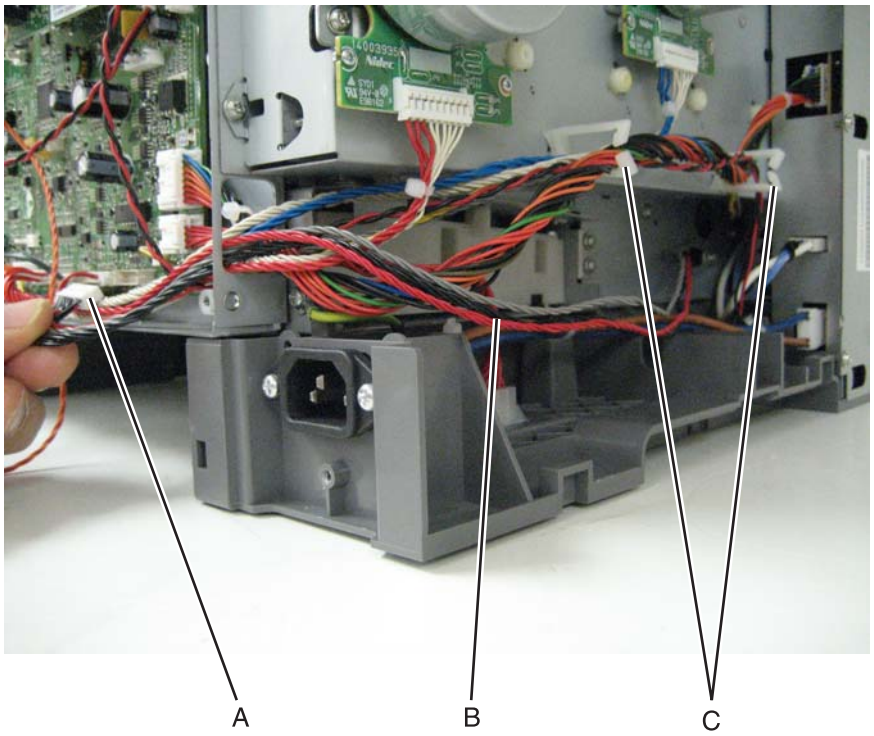
Warning: Make sure the belt is attached to the gear (B), Also; check the tension spring to make sure it is properly attached to the top cover (C). The following illustration shows the properly attached spring and belt.



Warning: After performing any repair that involves detaching the belt from the re-drive pulley on the fuser, run approximately 30 test pages, both simplex and duplex, to ensure the belt is performing properly. While the pages are running, listen for any noises, buzzing, clicking or rattling, that might indicate improper routing of the re-drive belt.

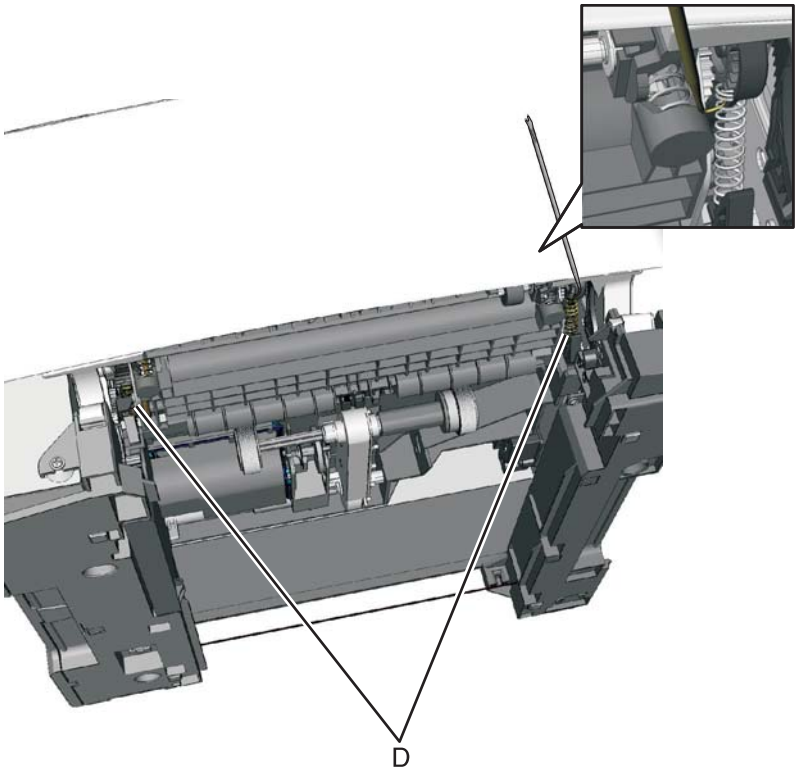
Autocompensator mechanism (ACM)—standard tray removal

1. Remove the toner bottles, the waste toner container, and the imaging unit (IU). See **“Imaging unit (IU) removal” on page 4-28** and see **“Waste toner bottle” on page 4-49**.
2. Remove the rear shield. See **“Rear shield removal” on page 4-7**.
3. Remove the left cover. See **“Left cover removal” on page 4-4**.
4. Remove the right cover. See **“Right cover removal” on page 4-7**.
5. Disconnect the autocompensator mechanism (ACM) cable connector (A) from the controller board.
6. Unclip the cable (B) from the retainers (C) on the left side.

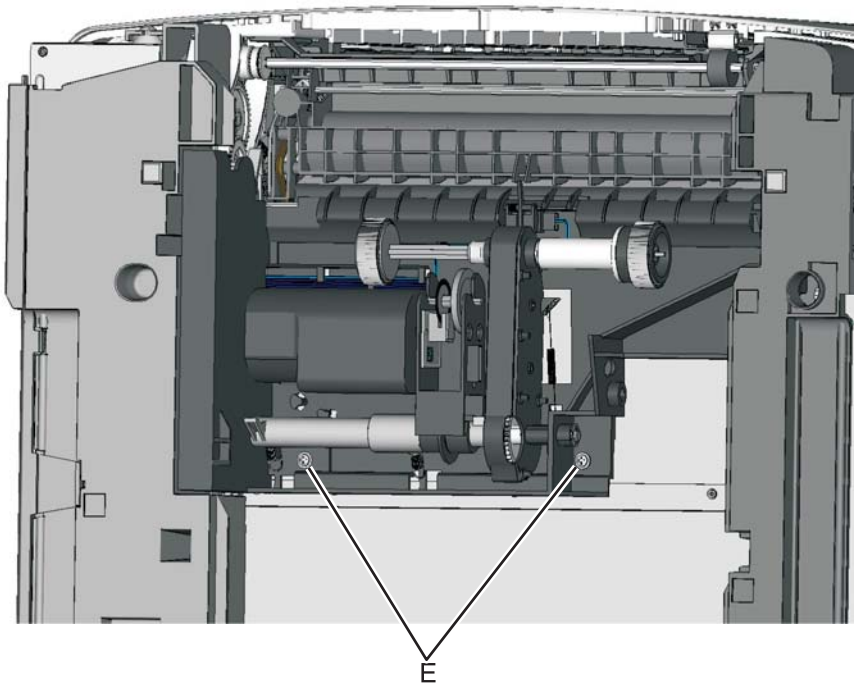


7. Reinstall the rear shield to protect the controller board. Turn the printer so the bottom is facing you.
   Warning: For models with a wireless antenna, use supports to prevent the antenna from taking the weight of the printer.
8. Carefully tilt the printer so the rear shield rests on the table.

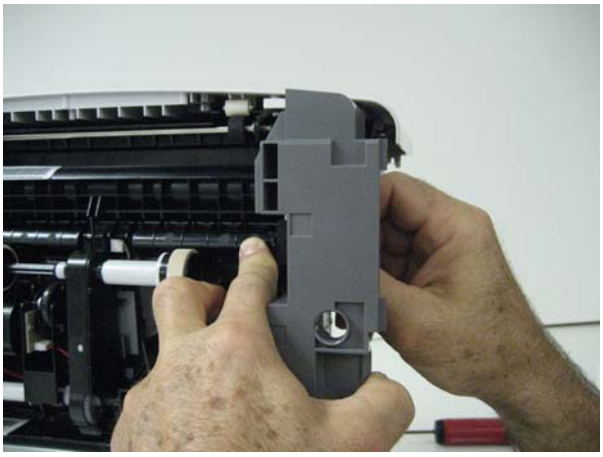
9. Remove the two springs (D).

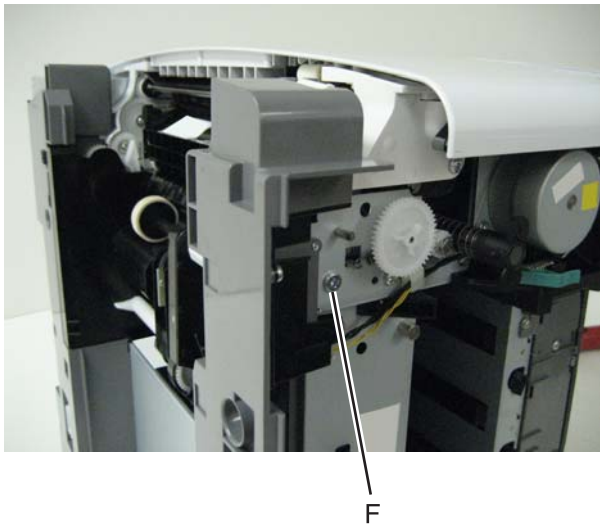


10. Remove the two screws (E) on the bottom.



11. On the right side, loosen the screw (F) with a screwdriver, and hold the ACM in place as you use your fingers to remove the screw.





12. Move the right side of the ACM out to free the shaft from the hole in the frame.
Note: Observe the location of the shaft and hole for reinstallation.

13. Remove the ACM.

Installation notes:

1. Place the left side of the ACM in the printer. Make sure the shaft on the left side aligns with the hole in the frame.

2. Turn the printer to the proper upright position.

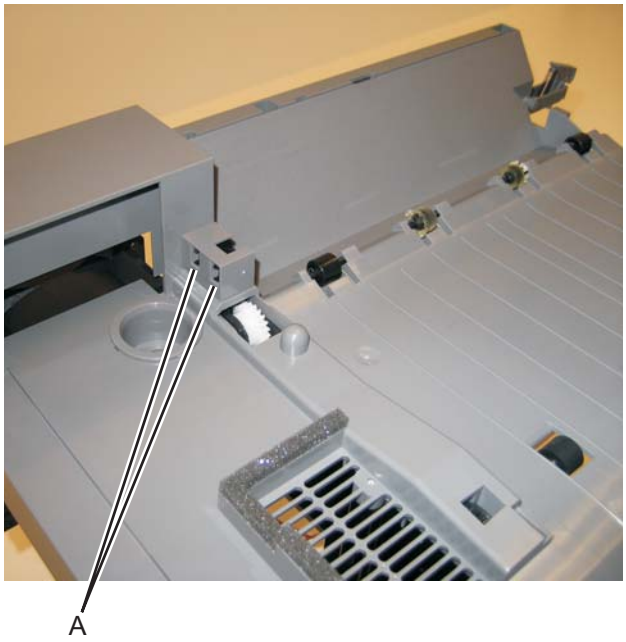
3. Route the cable through the frame and through the cable channel, making sure to clamp the cables into the two retainers on the left side.

4. Remove the rear shield, and connect the cable.

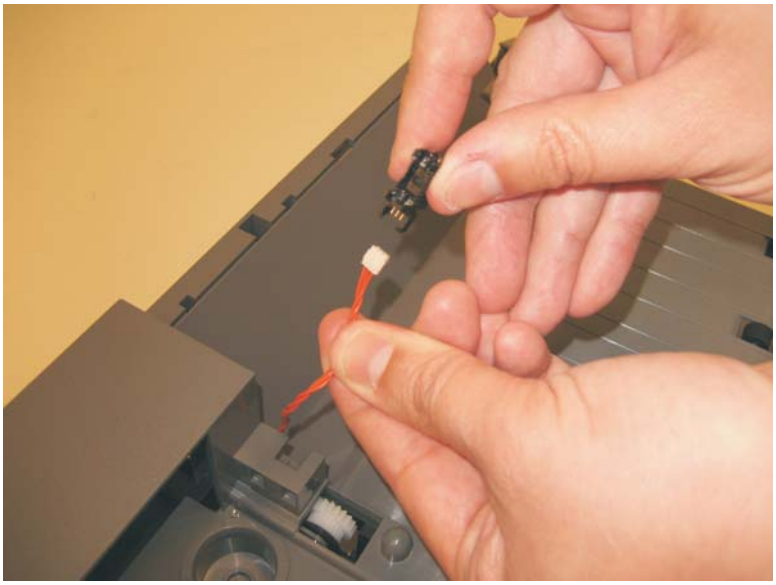
5. Replace the rear shield.

Bin full sensor

1. Remove the flatbed unit. See **“Flatbed removal” on page 4-53**.
2. Using a small flatblade screwdriver, gently depress the tabs (A) which secure the sensor to the top cover assembly.



3. Pull the sensor away from the top cover assembly.
4. Disconnect the sensor from the cable.



Controller board removal

Warning: Observe all ESD precautions while handling electrostatic-discharge sensitive parts. See **"Handling ESD-sensitive parts" on page 4-1**.

Warning: When replacing any one of the following components:

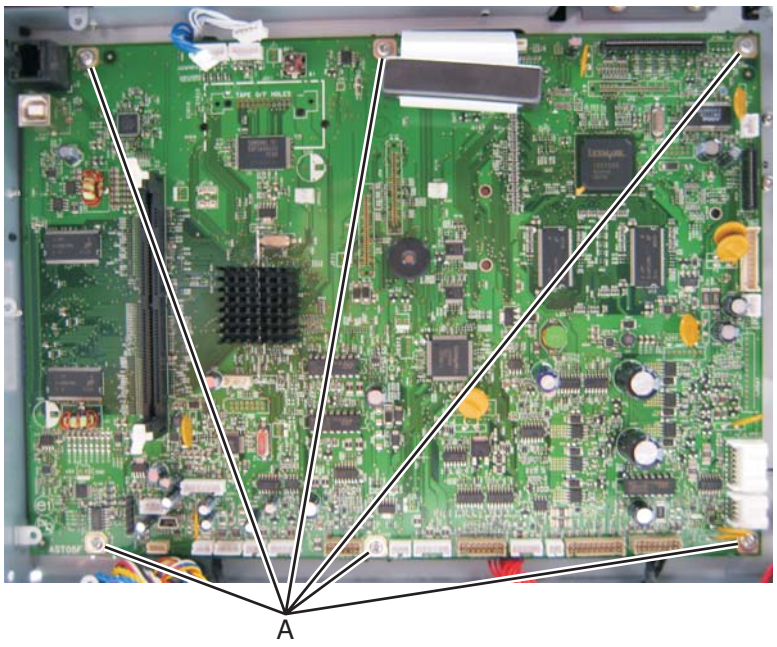
- Operator panel assembly
- Controller board

Replace only one component at a time. Replace the required component, and perform a POR before replacing a second component listed above. If this procedure is not followed, the printer will be rendered inoperable. Never replace both of the components listed above without a POR after installing each one, or the printer will be rendered inoperable.

Warning: Never install and remove components listed above as a method of troubleshooting components. **Once a component has been installed in a printer, it cannot be used in another printer. It must be returned to the manufacturer.**

CAUTION - POTENTIAL INJURY: There is danger of explosion if a lithium battery is incorrectly r Replace it only with the same or an equivalent type of lithium battery. Do not recharge, disassemble, or ir a lithium battery. Discard used batteries according to the manufacturer's instructions and local regulations.

1. Remove the rear shield See **"Rear shield removal" on page 4-7**.
2. Remove the fax card. See **"Fax card removal" on page 4-80**.
3. Remove the fax card standoff from the controller board.
4. Disconnect all the cables from the controller board.
5. Remove the six screws (A) that are securing the controller board to the controller board cage.



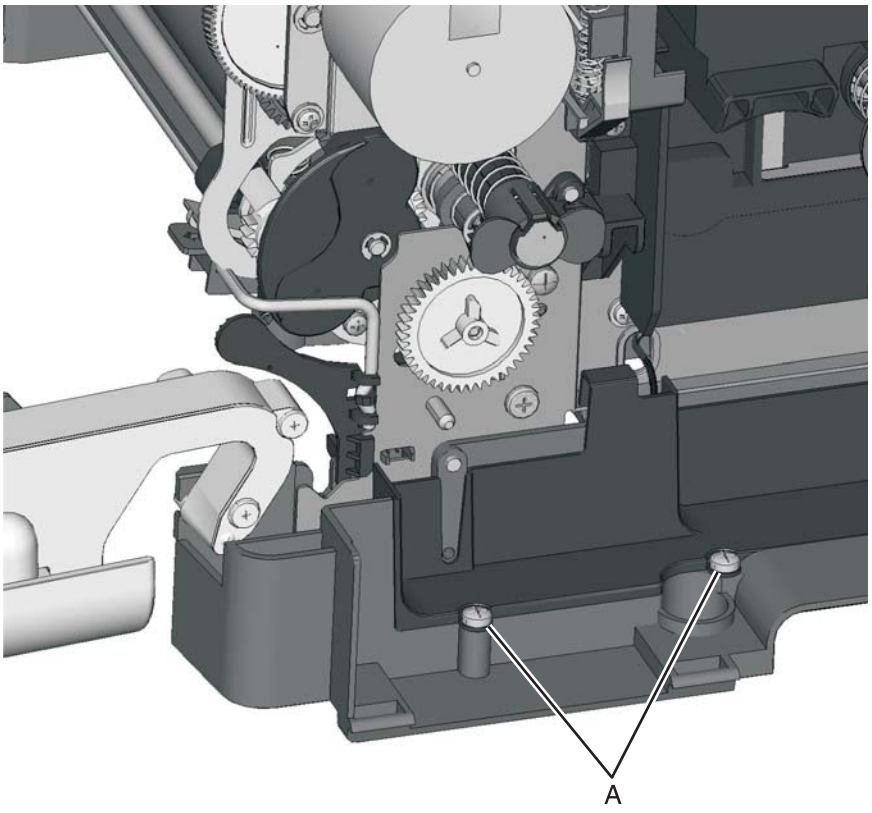
6. Remove the board.

Installation notes:

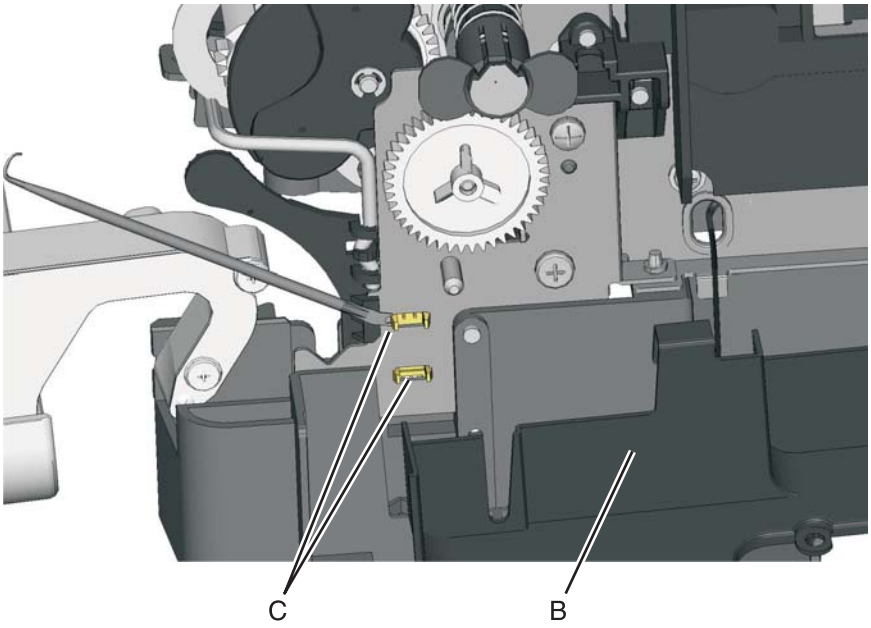
- When replacing the rear shield, make sure to route all of the cables through the correct shield opening. Make sure that the ground wire that is being held by the front, upper screw is in the correct location before installing.
- Print a few pages to verify the installation. If the pages are blank, confirm that the high-voltage power supply cable is properly seated. The connector may have been loosened at the HVPS.

Duplex sensor removal

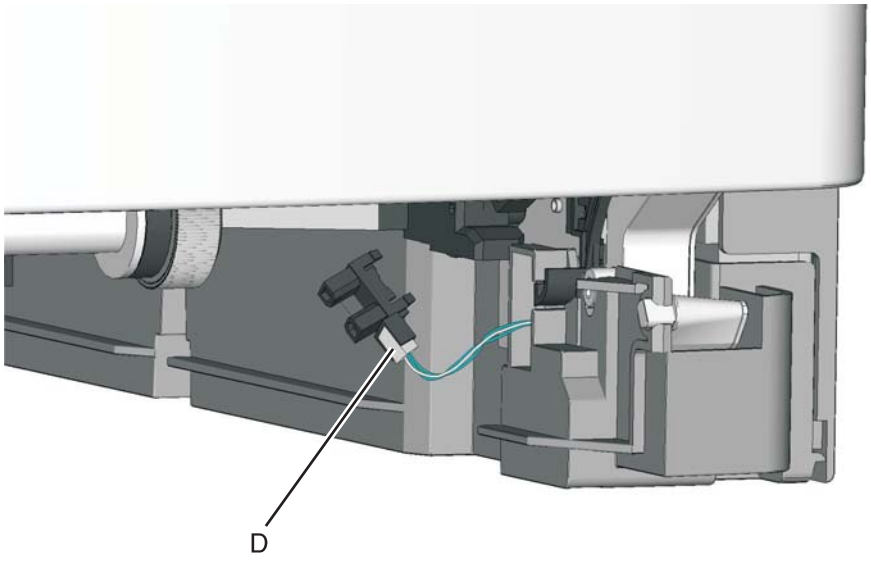
1. Open the toner supply cover.
2. Open the front cover.
3. Remove the right cover. See **"Right cover removal" on page 4-7**.
4. Remove the waste toner container. See **"Waste toner bottle" on page 4-49**.
5. Remove the two screws (A) from the cable channel cover.



6. Pull the corner of the cable channel cover (B) away from the right side to access the sensor posts (C). Unclip the sensor.



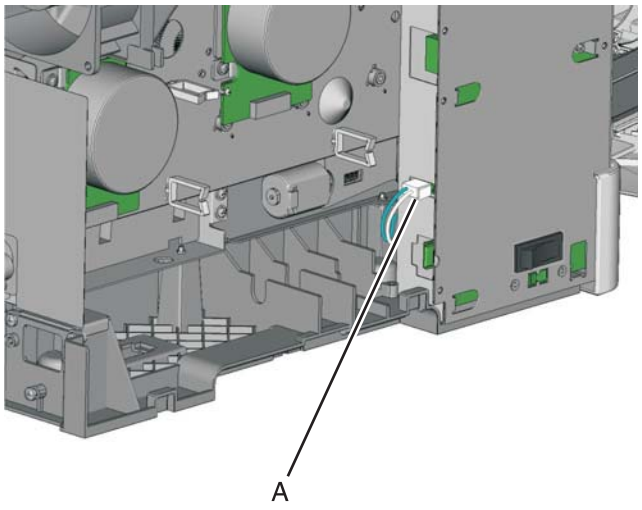
7. Remove the sensor, and disconnect the cable (D) from the duplex sensor.
Note: Close the front cover, and slightly lift the front of the printer to get better access.

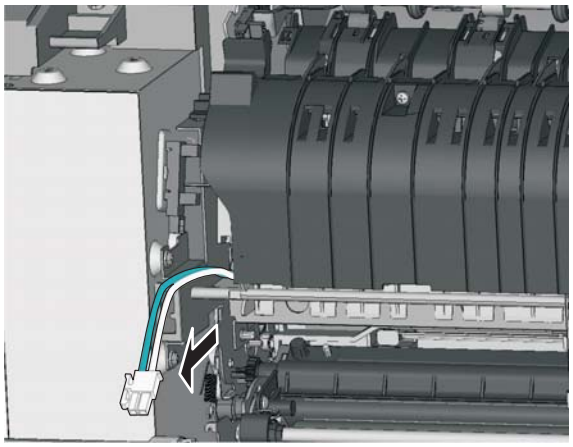


Fuser assembly removal

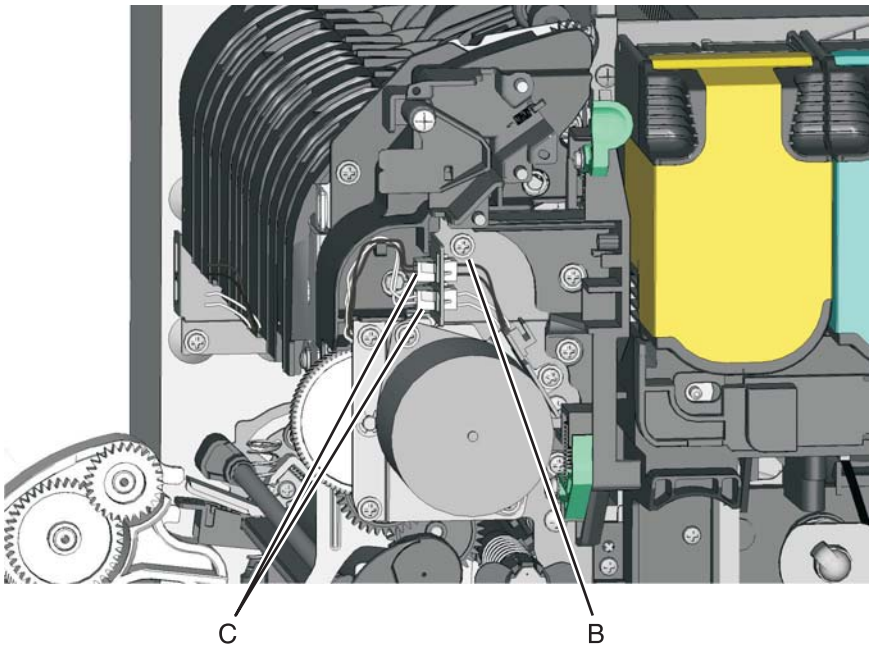
1. Remove the right cover. See **"Right cover removal" on page 4-7**.
2. Remove the left cover. See **"Left cover removal" on page 4-4**.
3. Disconnect the two-wire fuser cable (A) from the LVPS.
4. Position the fuser cable so that it can be pulled through from the front of the printer, and guide the cable to the front.

Warning: Be careful not to damage the cable by pulling too hard or cutting the cable insulation

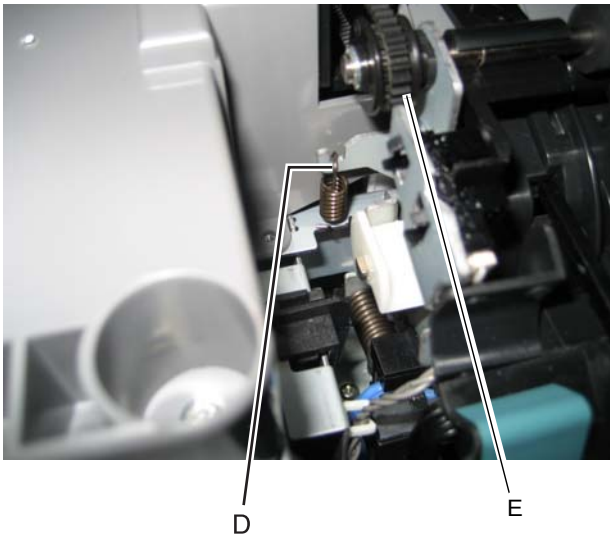


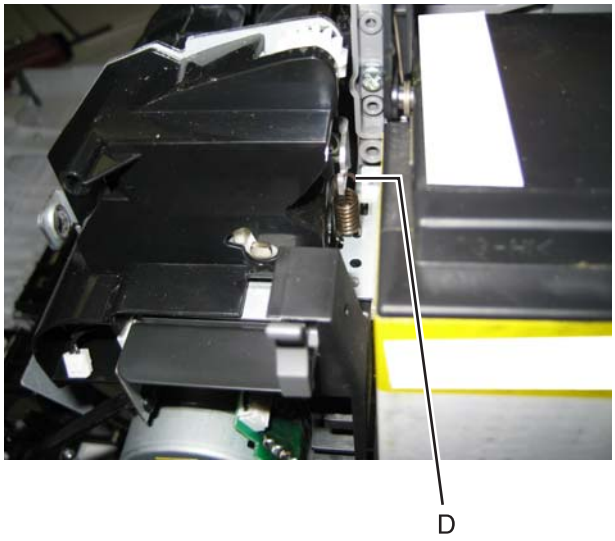


5. Remove the screw (B) on the right side of the frame.
6. Disconnect the thermistor cable (C) from the fuser.



7. Unhook the springs (D) from either side of the fuser.



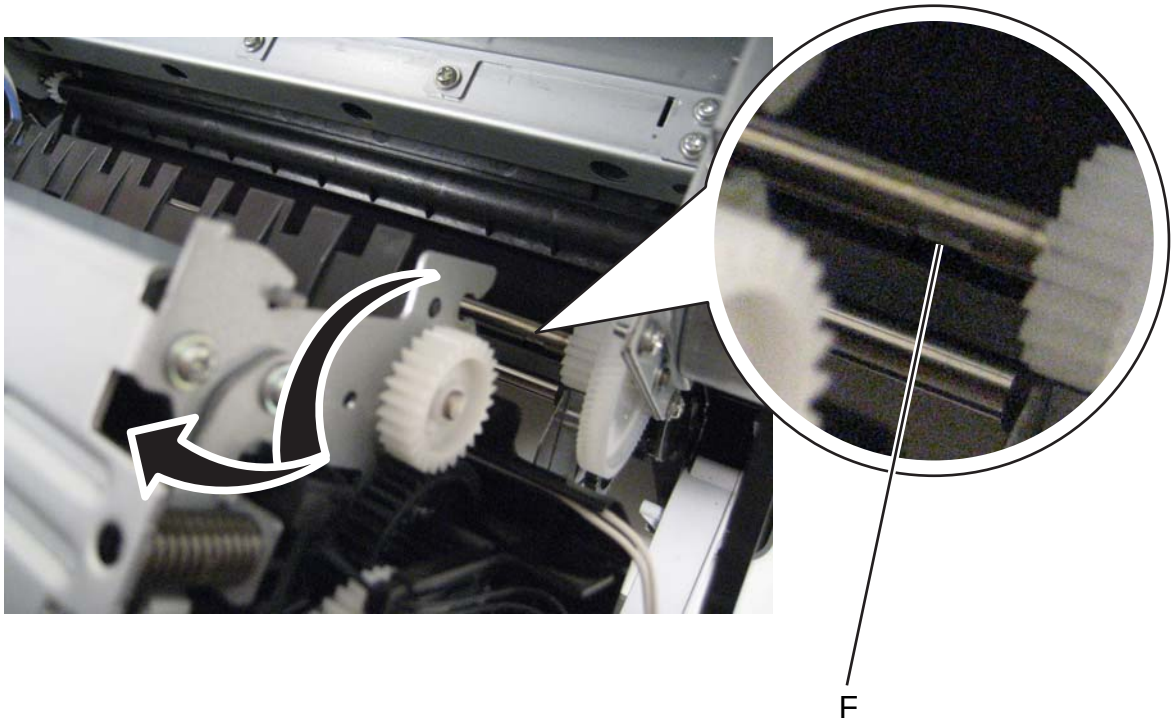


8. Detach the geared belt (E) from the drive pulley on the fuser exit roll shaft.

Note: Do not remove the pulley or spacer from the shaft.

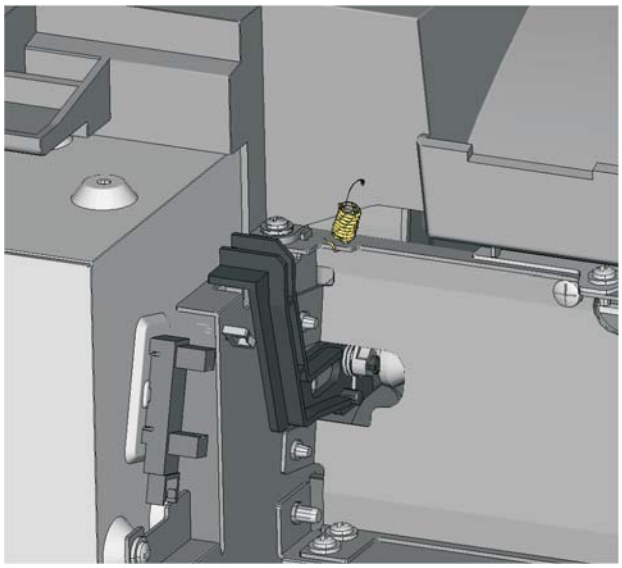
9. Rotate the top of the fuser toward the front, slide it to the left to align the fuser side frame with the flat areas of the shaft (F) and lift to remove the fuser.

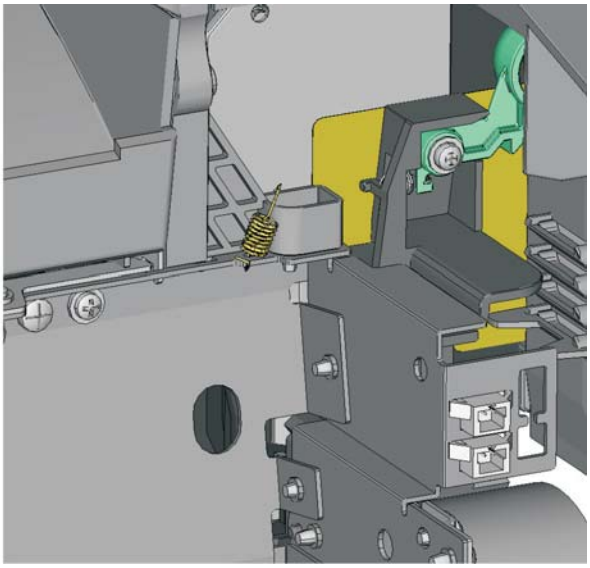
Warning: Be careful to not interfere with or damage the fuser exit sensor to the left of the fuser.



Installation notes:

- Make sure the springs are resting on the top so they can be reached once the fuser is in place.

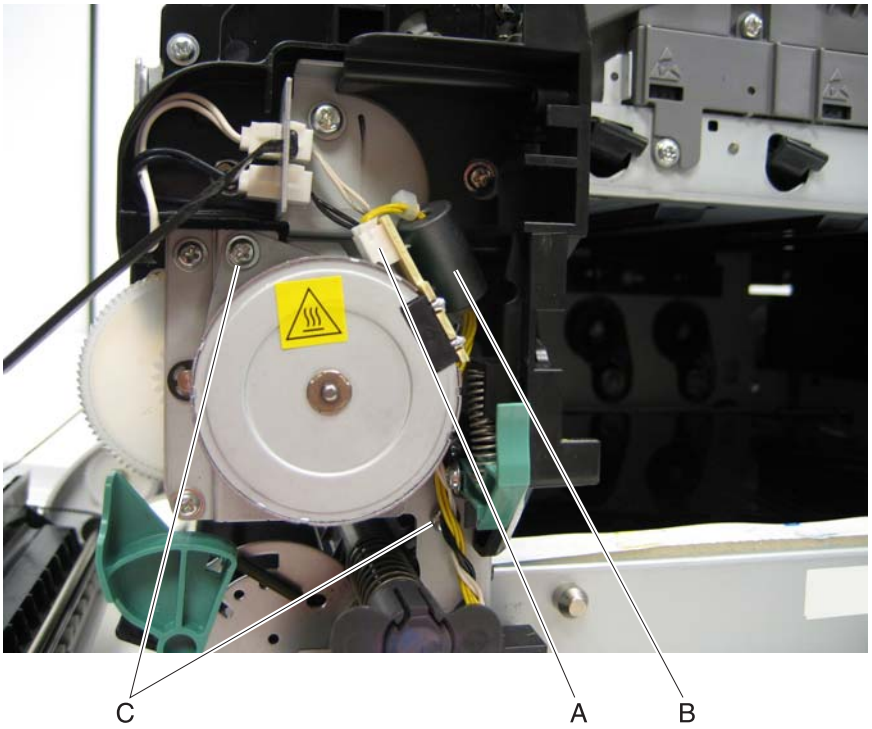




- When reinstalling on the right, make sure the gears mesh.
- Be careful not to interfere with the exit sensor on the left side.
- Reroute the cables back through their retainers.

Fuser drive motor assembly removal

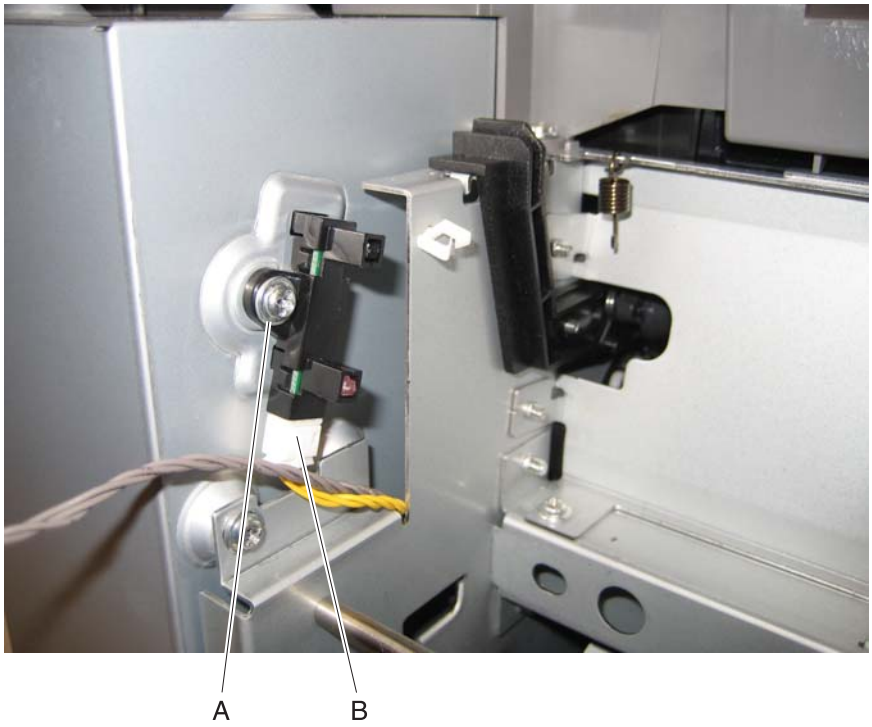
1. Open the front cover.
2. Remove the right cover. See **"Right cover removal" on page 4-7**.
3. Disconnect the cable (A) from the fuser drive motor assembly.
   Note: If you remove the toroid (B) from the cable, be sure to return the toroid to the cable when you re-install.
4. Remove the two screws (C).



5. Remove the fuser drive motor assembly.

Fuser exit sensor removal

1. Open the front cover.
2. Remove the fuser assembly. See **“Fuser assembly removal” on page 4-19**.
3. Remove the screw (A) securing the fuser exit sensor.
4. Disconnect the cable (B) from the fuser exit sensor.
5. Remove the lower end of the sensor with a flat blade screwdriver, and gently pull the sensor from the bracket.

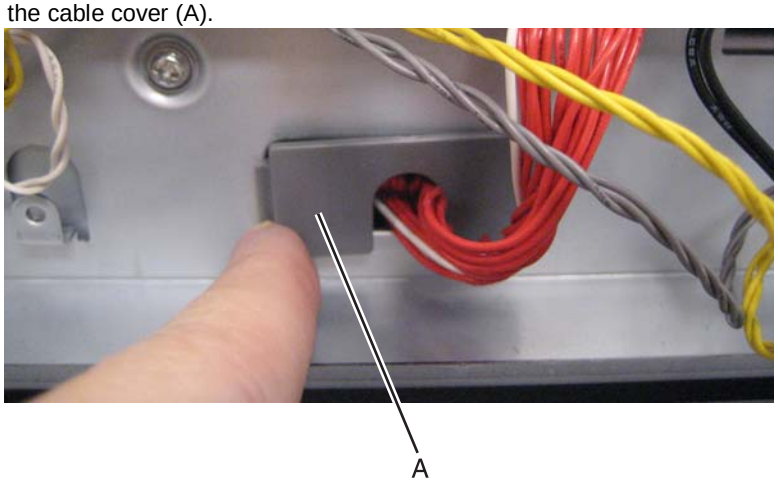


6. Remove the sensor.

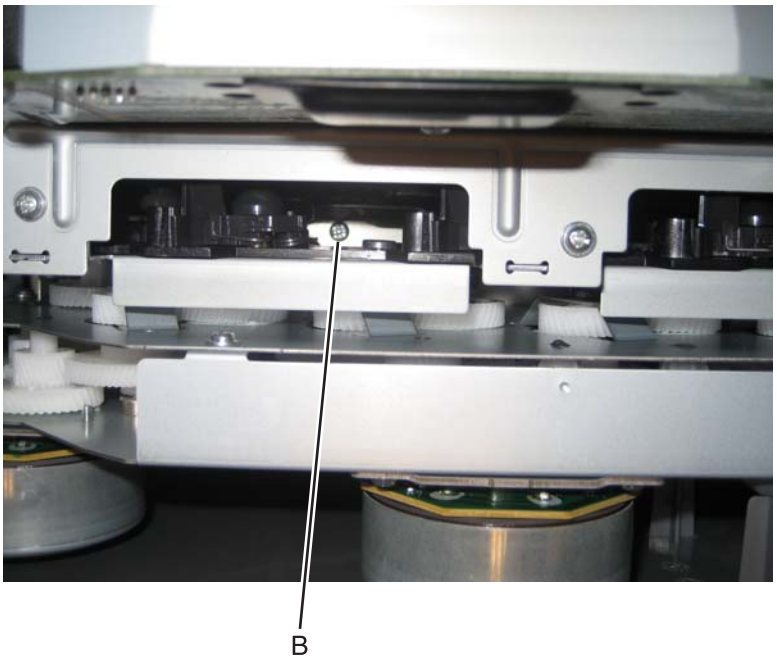
High-voltage power supply (HVPS) assembly removal

Note: This removal requires a magnetized, short-handled Phillips head screwdriver.

1. Remove the top cover assembly. See **"Top cover assembly removal" on page 4-9**.
2. Remove the rear shield. See **"Rear shield removal" on page 4-7**.
3. Remove controller board. See **"Controller board removal" on page 4-16**.
4. Remove the cable cover (A).

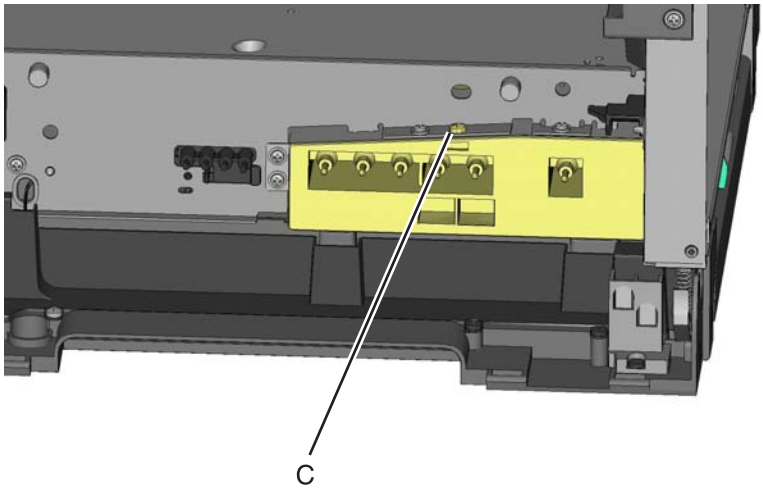


5. Disconnect the high-voltage power supply (HVPS) cable at the HVPS.
6. Remove the screw (B). The screw is accessible from the top of the printer, and requires a long-shank magnetized Phillips screwdriver. It is the only screw without a flanged head.



7. Remove the screw (C) securing the HVPS.

8. Carefully slide the HVPS out.



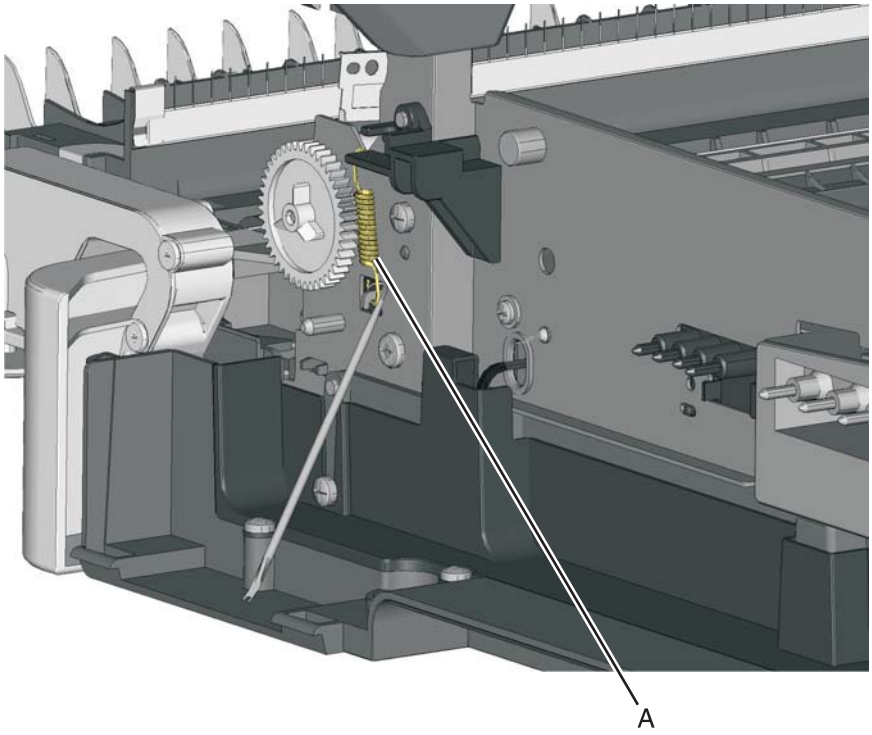
Installation notes:

When replacing the HVPS, loosely replace screw (C), replace (tighten) screw (B), and tighten screw (C). Also make sure that the HVPS cable is securely connected to the controller board and the HVPS unit.

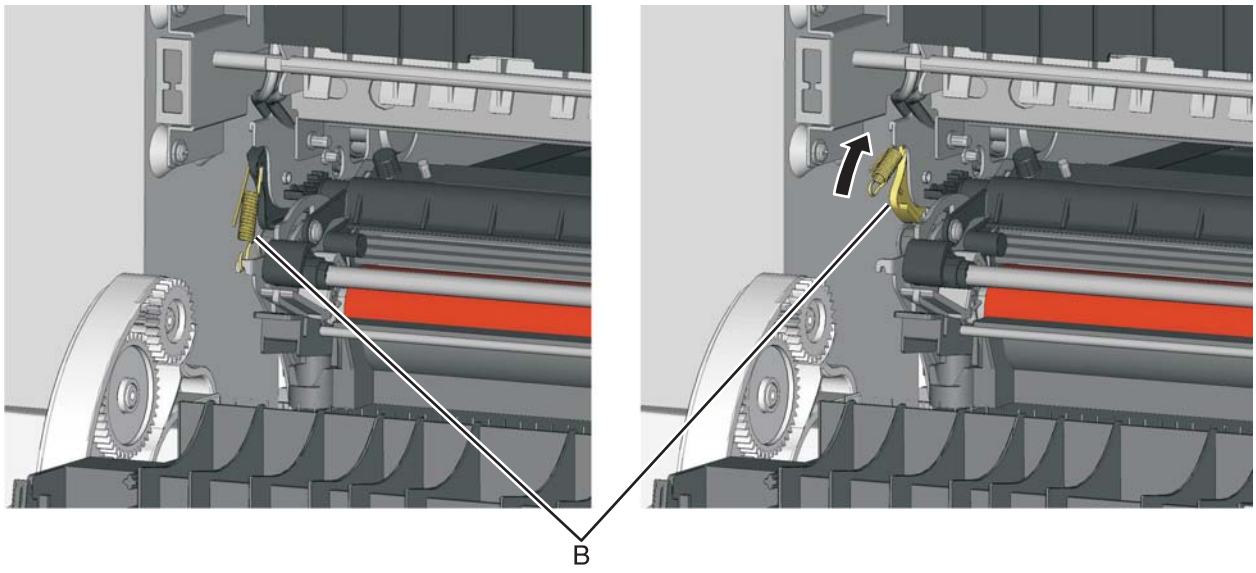
Image transfer unit (ITU)

1. Write down the number on the new ITU before installing it. You will need the 16-digit numeric value from the barcode after the installation, and it is easier to see at this point.
2. Remove the right cover. See **“Right cover removal” on page 4-7**.
3. Remove the rear shield. See **“Rear shield removal” on page 4-7**.
4. Remove the waste toner container. See **“Waste toner bottle” on page 4-49**.
5. Remove the imaging unit (IU). See **“Imaging unit (IU) removal” on page 4-28**.

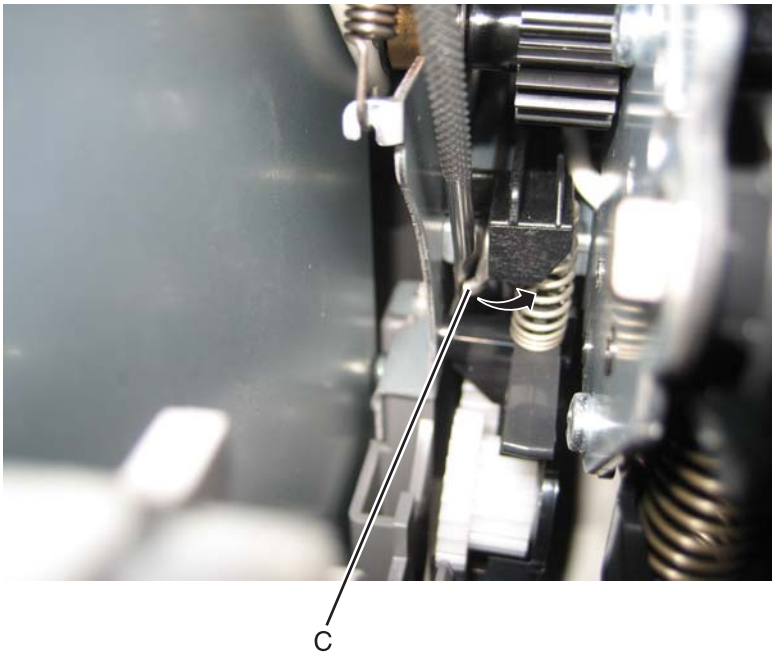
6. Disconnect the two springs (A) from the side frames, leaving them attached to the ITU at the moment.



7. Rotate the left spring (B) and pivot the cam away from the ITU so the spring is held out of the ITU path**.**



8. Rotate the release lever (C) in a counter clockwise direction with a spring hook to decouple the ITU while pulling the ITU toward the front**.**



9. Hold the release lever while removing the ITU.

Installation note:

- Write down the 16-digit numeric value of the new FRU before you begin to install it.
- You may have to rotate the release lever again to install the new ITU.
- When you have replaced the ITU, be sure to enter the 16-digit numeric value from the barcode on the new

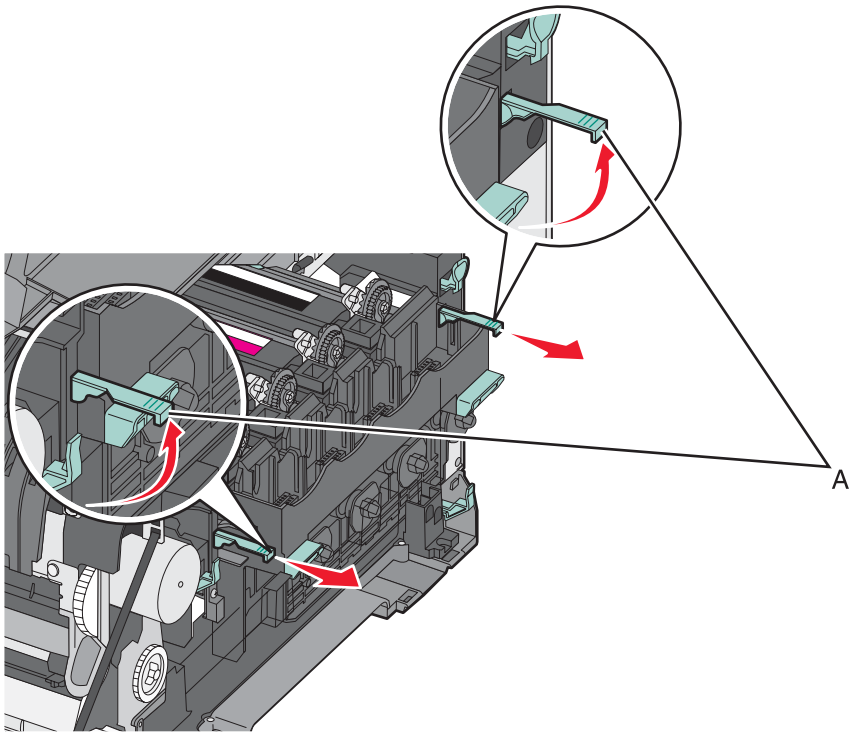
1. Enter the Diagnostics Menu:
   a. Turn off the printer.
   b. press and hold ◀ and ☑.

   c. Turn on the printer.
   d. Release the buttons when the installed memory and processor speed displays.
2. Select **PRINTER SETUP** from Diag Menu, and press **Select** (☑).
3. Select **ITU Barcode**, and press **Select** (☑).
4. To enter the 16 digit numeric value:
   Use ◀ to decrease the leftmost digit value or ▶ to increase the value. press **Select** (☑) to advance to the next digit. If a digit is already correct, press **Select** (☑) to accept the number and to continue. When the last number is entered, press **Select** (☑), and Submitting changes… should appear. if the entered number is incorrect, Check Sum Does Not Match displays. Check and re-enter the number.

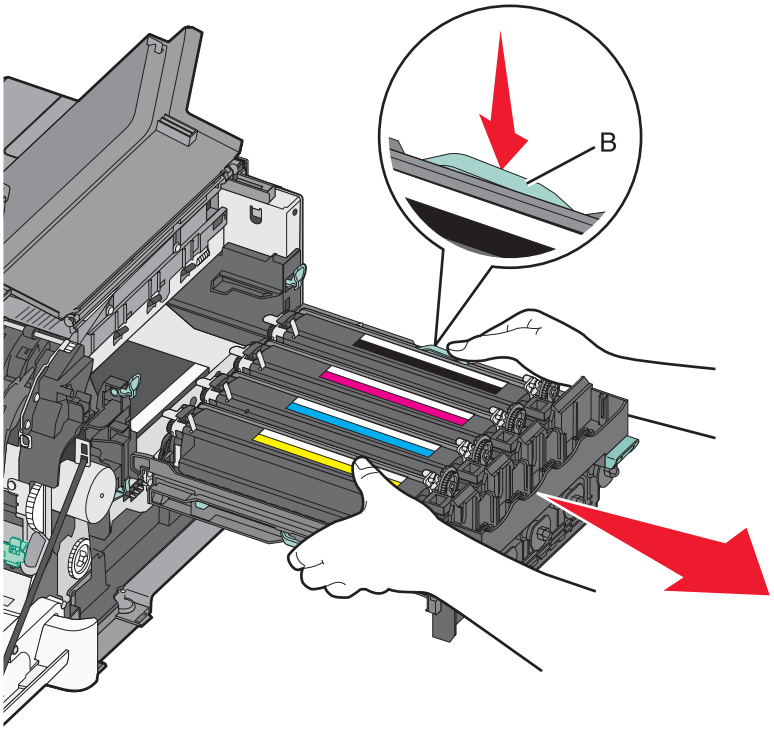
Imaging unit (IU) removal

The Imaging unit is customer-replaceable unit and is not a FRU.

1. Open the front cover.
2. Lift the toner cover by sliding the latch to the left.
3. Remove the waste toner bottle. See **“Waste toner bottle” on page 4-49**.
4. Remove the cartridge bottles.
5. Lift the two latches (A) to unlock the imaging uni.



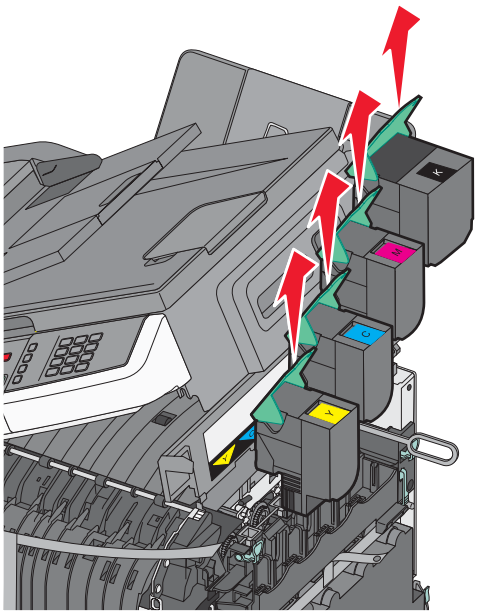
6. Press and hold the release lever (B), and pull the imaging unit straight out.



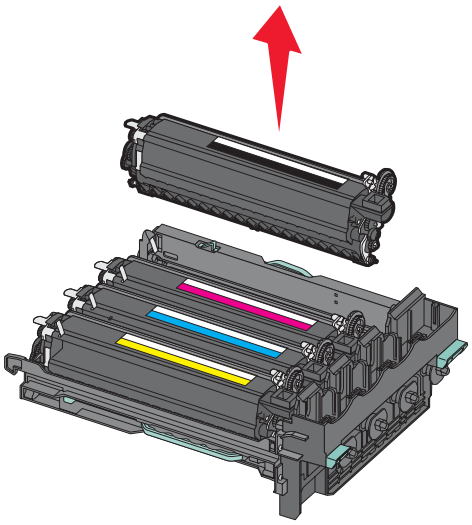
Developer unit removal

The developer units are not FRUs.

1. Raise the scanner unit, and remove the toner cartridges.

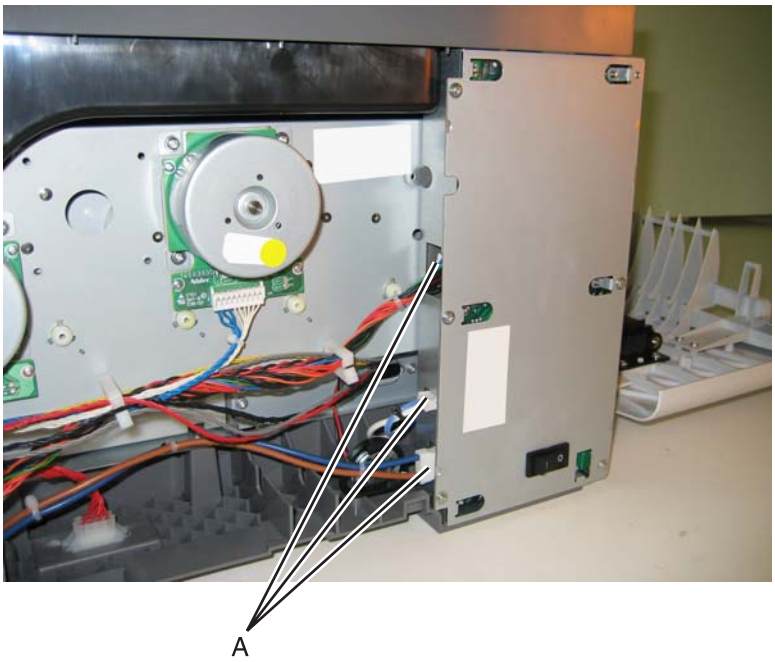


2. Remove the imaging unit. See **"Imaging unit (IU) removal"**.
   Warning: Do not touch the underside of the imaging unit. This could damage the developer units.
3. Remove the developer unit you need.

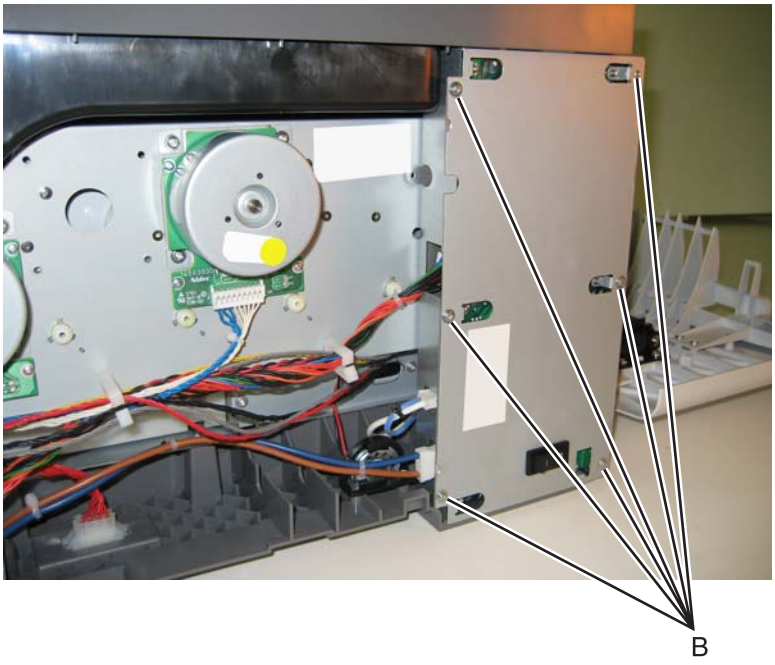


Low-voltage power supply (LVPS) assembly

1. Remove the left cover. See **“Left cover removal” on page 4-4**.
2. Disconnect the three cables (A) from the LVPS.



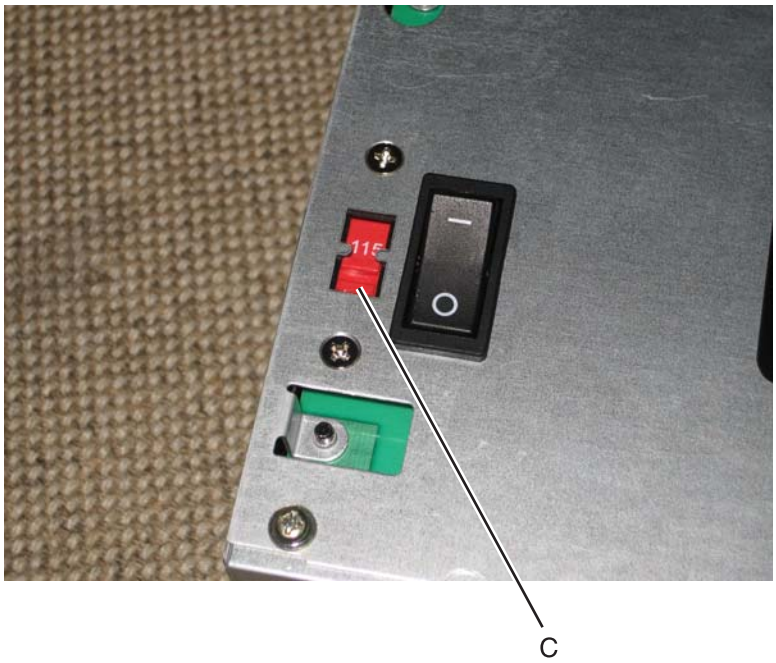
3. Remove the six screws (B).



4. Remove the LVPS.

Warning: If you receive a new low-voltage power supply with a voltage selector switch (C), be sure to set the switch to the correct setting for your voltage requirements before installing the low-voltage power supply. The switch can be set for either 115 V or 230 V. Failure to do so will result in damage to the power supply.

Note: Some LVPS FRUs are auto-sensing and do not have the switch, even though the opening may still be present in the shield.

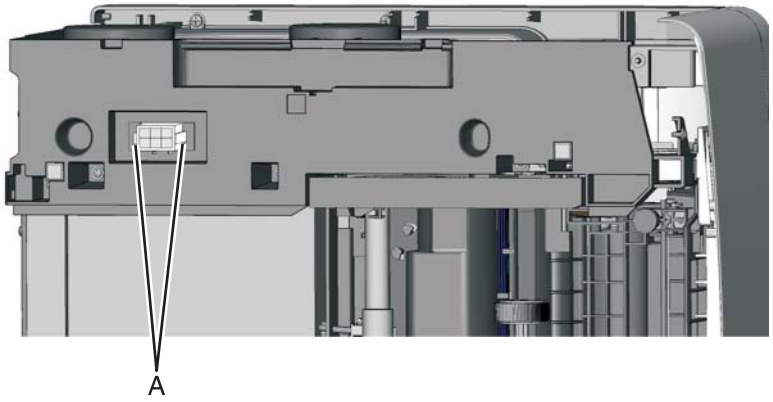


Lower frame removal, right and left

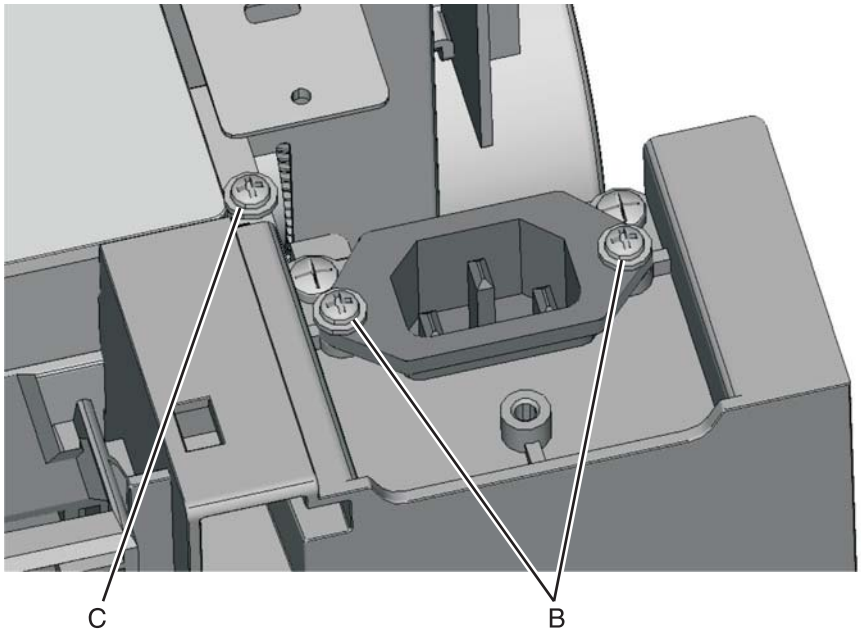
The right and left lower frames are in the same FRU.

Left lower frame

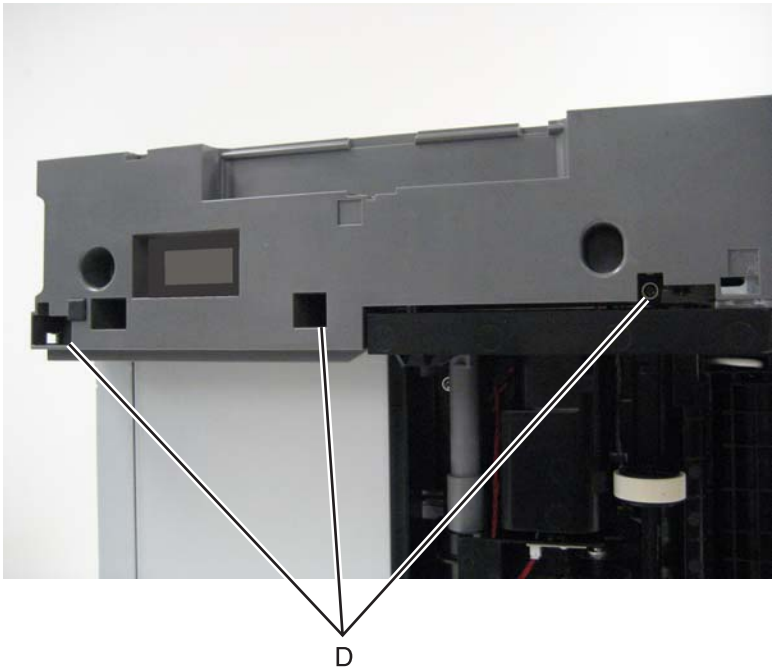
1. Open the front cover.
2. Remove the waste toner bottle. See **“Waste toner bottle” on page 4-49**.
3. Remove the imaging unit. See **“Imaging unit (IU) removal” on page 4-28**.
4. Remove the low-voltage power supply. See **“Low-voltage power supply (LVPS) assembly” on page 4-31**.
5. Place the printer on the right side.
6. Remove the tray 2 connector (A) by pinching the tabs together and lowering the connector into the printer.



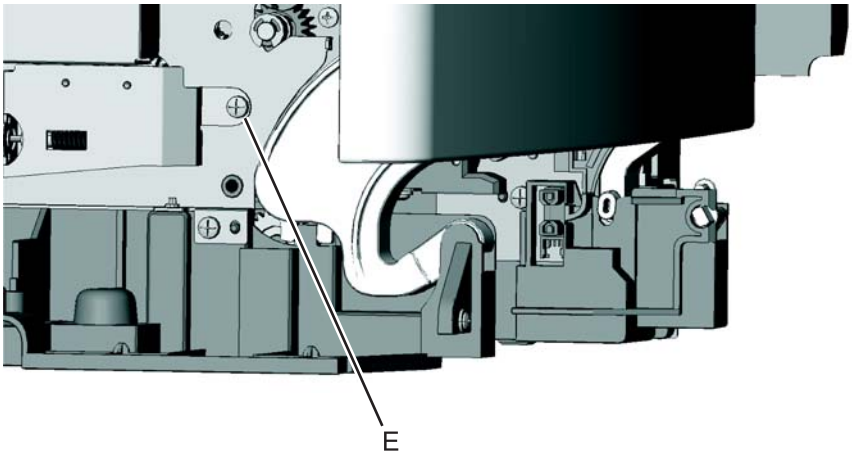
7. At the rear of the printer, remove the two screws (B) from the AC receptacle, and the ground screw (C).



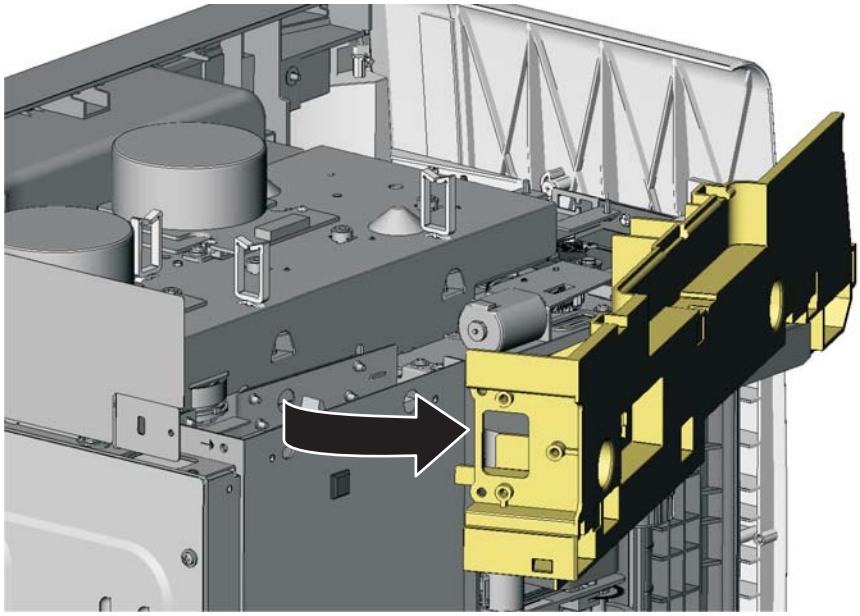
8. Remove the AC receptacle from the left lower frame.
9. Remove the three screws (D) securing the left lower frame.



10. Remove the screw (E) on top of the frame.

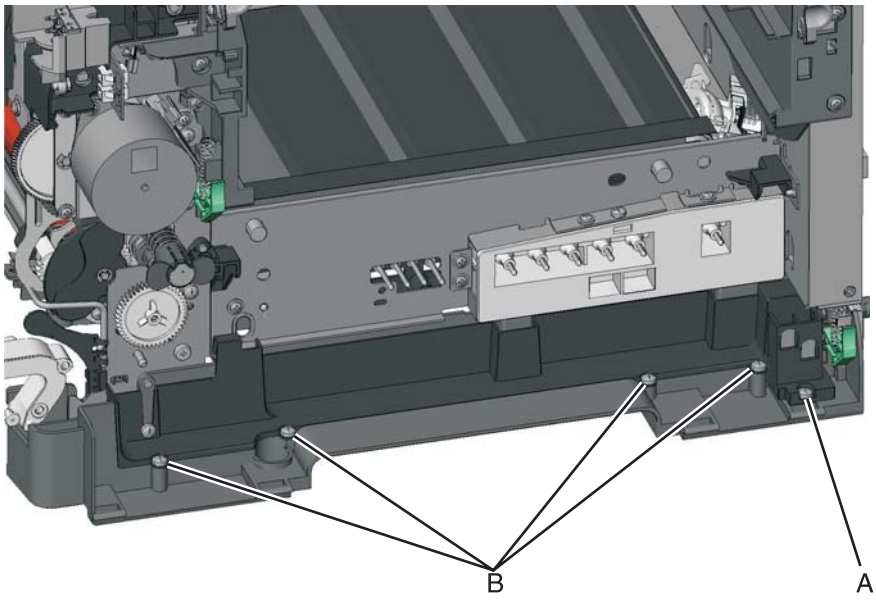


11. Swing the left lower frame away from the printer, and remove.

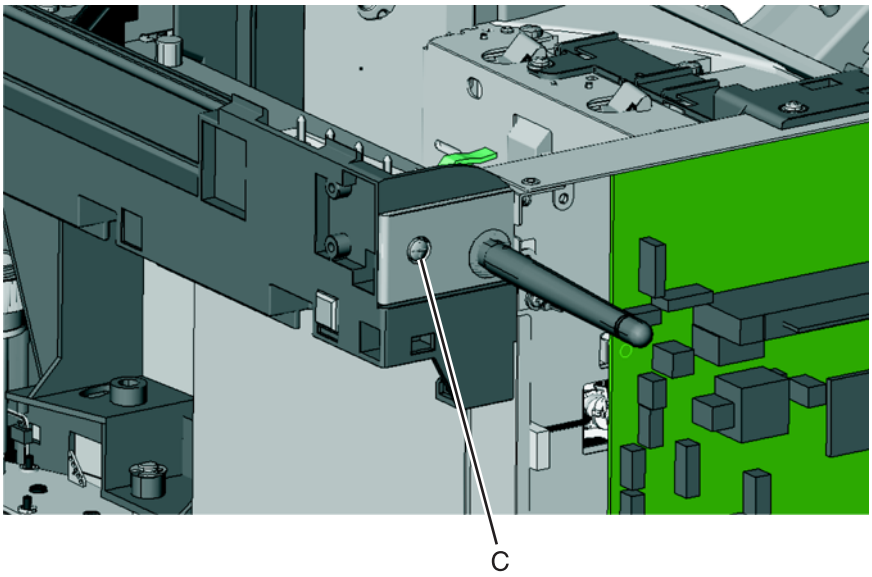


Right lower frame

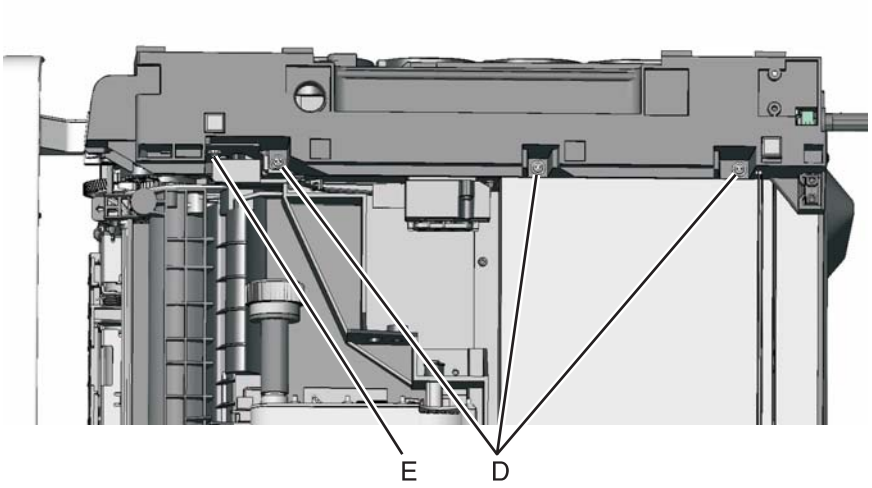
1. Open the front cover.
2. Remove the right cover assembly. See **"Right cover removal" on page 4-7**.
3. Remove the waste toner bottle. See **"Waste toner bottle" on page 4-49**.
4. Remove the imaging unit. See **"Imaging unit (IU) removal" on page 4-28**.
5. Remove the rear shield. See **"Rear shield removal" on page 4-7**.
6. Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.
   Note: The waste toner bottle sensor contact does not need to be unplugged or removed.
7. Remove the four screws (B) securing the cable cover.
   Note: The cable cover is part of the right lower frame FRU.



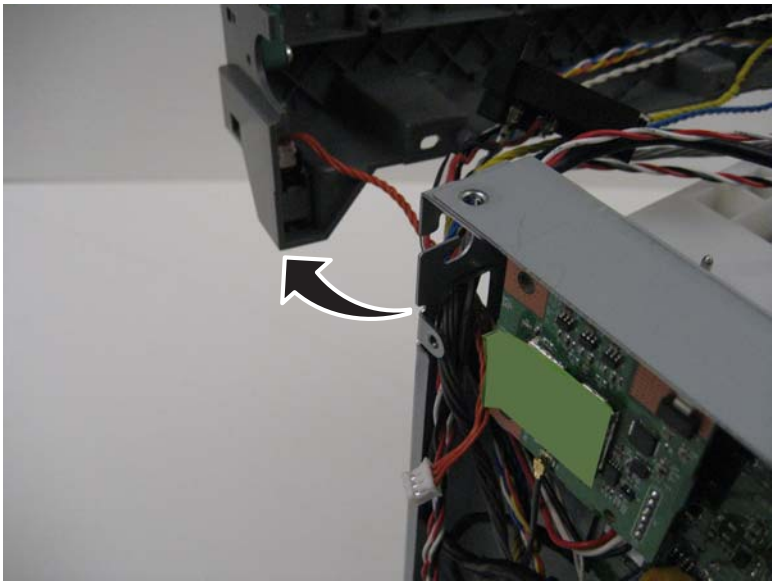
8. Carefully place the printer on its left side.
9. Remove the screw (C) securing the wireless antenna (Wireless models only) to access the right frame. Do not remove the antenna.



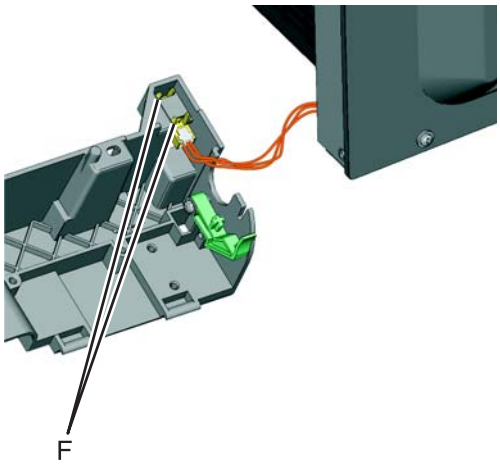
10. Remove the three screws (D) securing the lower right frame to the printer.
11. Remove the screw from the rear of the printer (E).

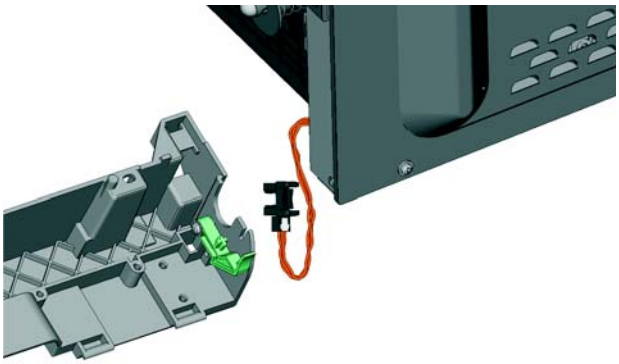


12. Swing the rear part away from the printer to access the spring and sensor.

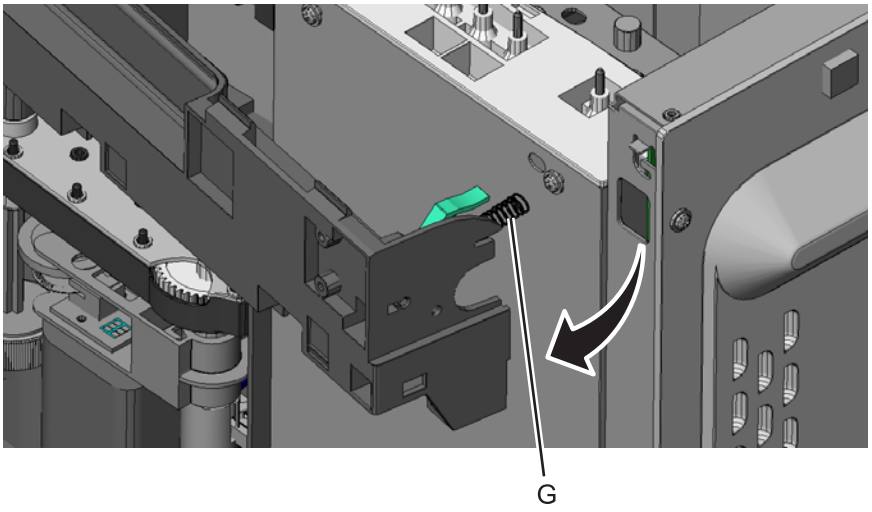


13. Release the tabs to remove the tray present sensor (F) from the side frame.
Note: The sensor is not part of the left lower frame FRU.





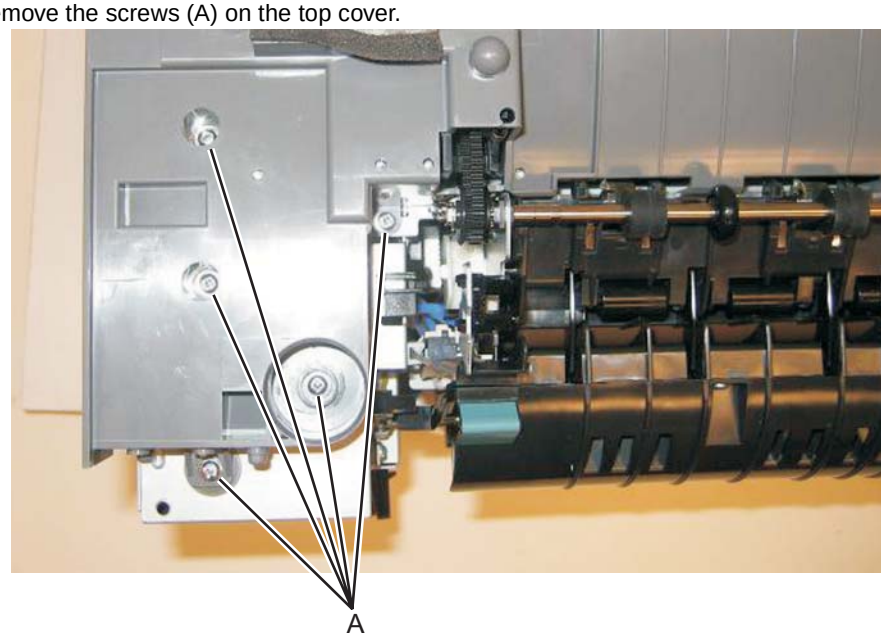
14. Remove the spring (G) from the left lower frame FRU.



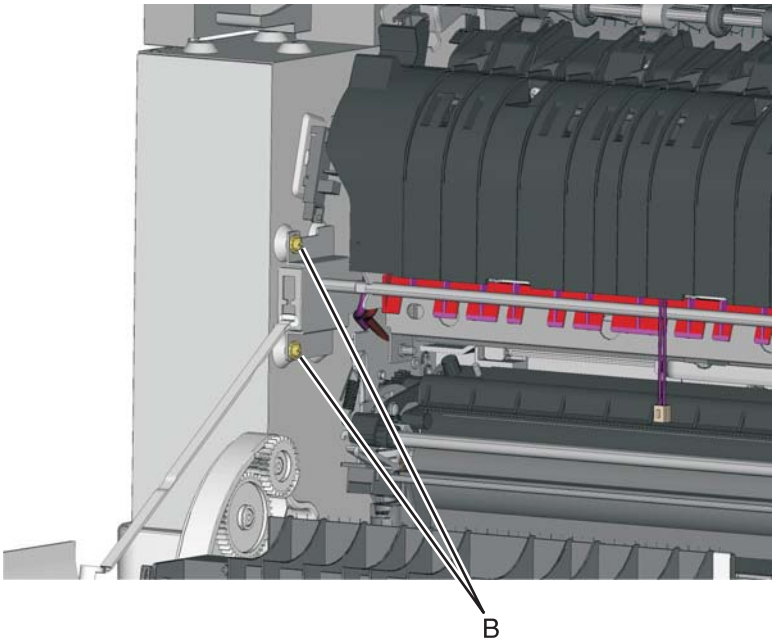
15. Swing the rear of the lower frame away from the printer, and remove.

Main drive gear assembly with motor removal

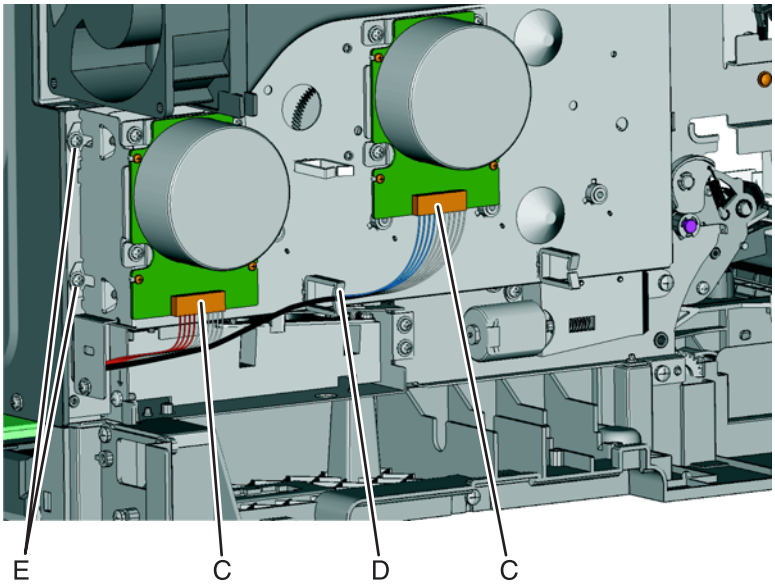
1. Remove the left cover. See **“Left cover removal” on page 4-4**.
2. Remove the LVPS. See **“Low-voltage power supply (LVPS) assembly” on page 4-31**
3. Remove the screws (A) on the top cover.



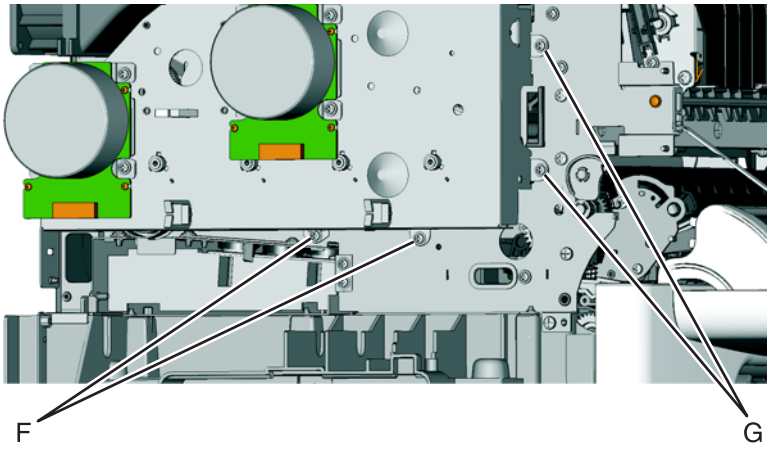
4. Remove the two screws (B) from the inside left side**.**



5. Unplug the cables (C) from the motors, and remove all cables from the retainer (D).
   Note: Observe the cable routing for reinstallation.
6. Remove the two screws (E) from the rear.



7. Remove the two screws (F) from below the main drive gear assembly.
8. Remove the two screws (G) from the right of the main drive gear assembly.



9. Lift the main drive gear assembly with motor, and remove.

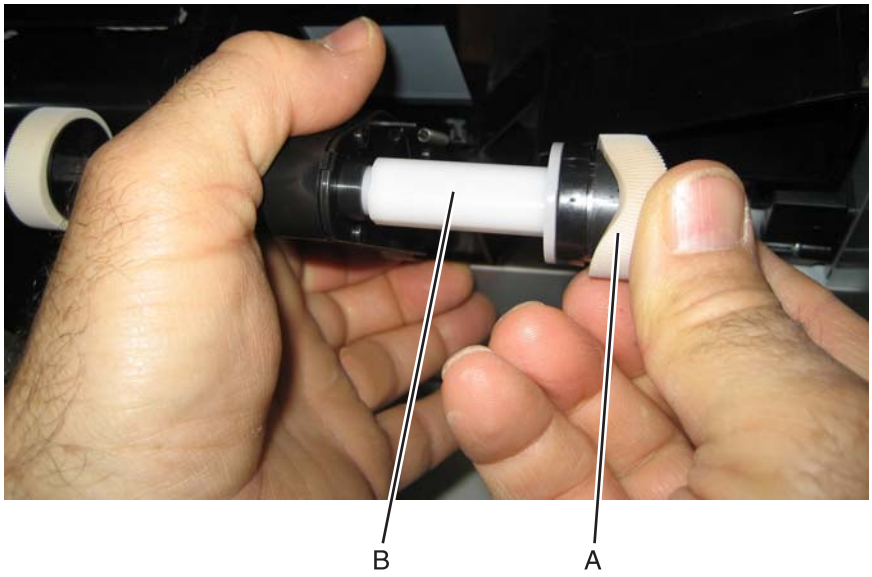
Pick tires removal—integrated 250-sheet media tray

Note: You will need to have a soft, padded work surface.

Warning: Remove only the rubber tires and not the paper pick tire assembly to avoid losing small parts.

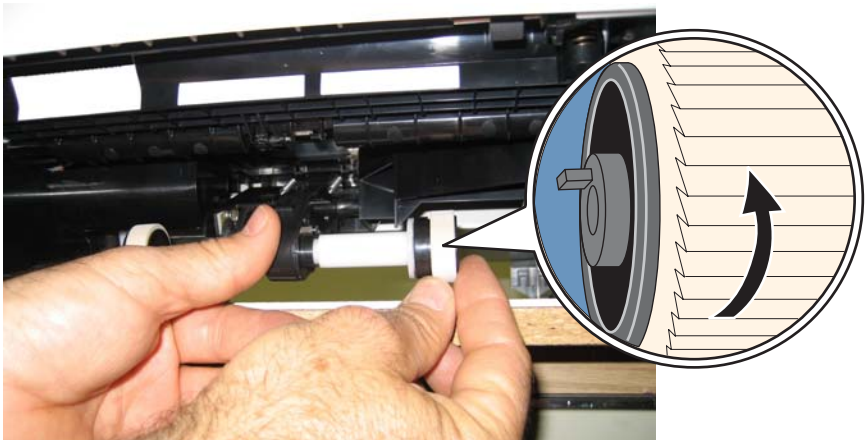
The paper pick tires are located in the base printer. There are also tires in the optional 550-page media tray. If you have this additional option, and you are having problems with media picking, replace these tires also. Always replace the paper pick tires in pairs. The tires come in a package of two.

1. Remove the media tray.
2. Place the printer so the front edge extends over the edge of the table or desk.
3. Lower the autocompensator mechanism.
4. Remove the rubber tires (A) from the pick roll assembly (B). Repeat for the other tire.
   Warning: Be very careful **not** to unlatch the right side hub, or the clutch may be damaged. If the ball bearings come out of the clutch, it will have to be reassembled on a flat surface.



Installation notes:

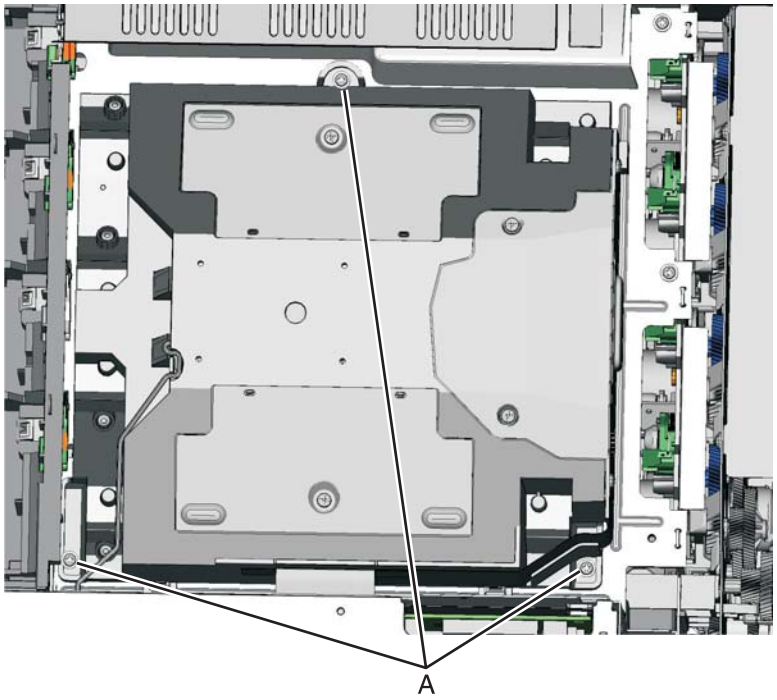
Install the new rubber tires with the surface texture turning in the direction as shown.



Note: Feel each rubber surface to verify it turns properly in the direction shown.

Printhead removal

1. Remove the scanner assembly. See**“Flatbed removal” on page 4-53**.
2. Remove the top cover. See **“Top cover assembly removal” on page 4-9**.
3. Disconnect the cables.
4. Remove the three screws (A).



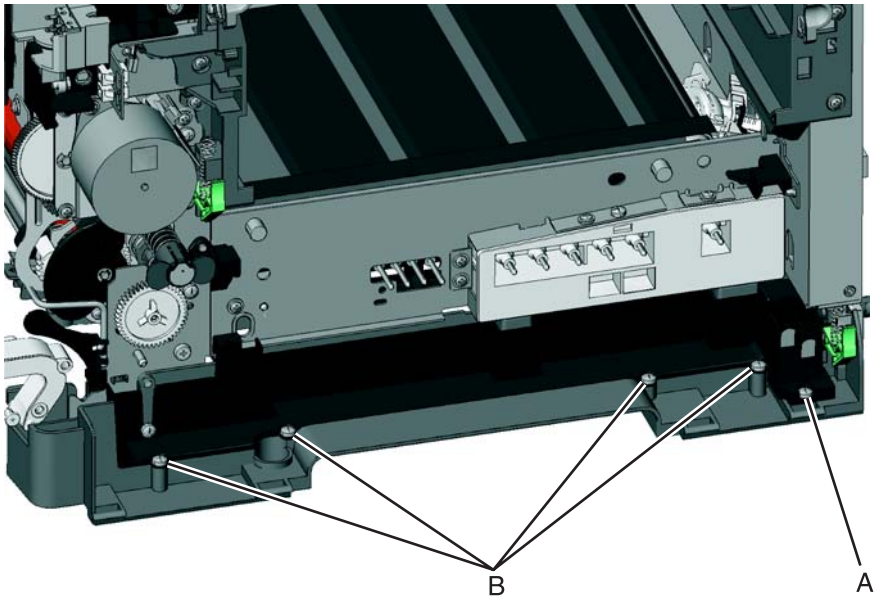
5. Remove the printhead.

Installation note:

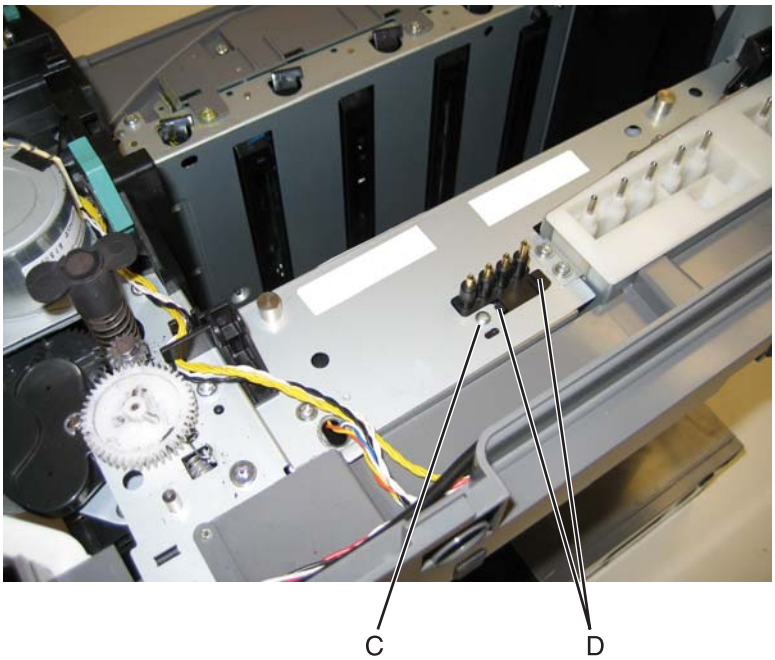
When the printhead is replaced, perform the registration (black planes) and alignment (color planes). See **“Registration” on page 3-4** and **“Alignment” on page 3-7**.

Imaging unit contacts

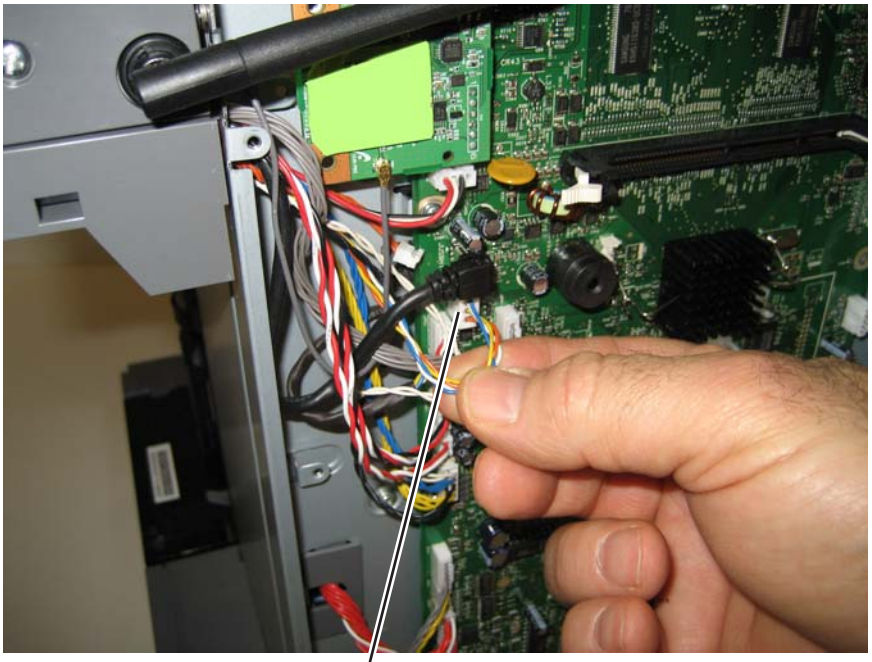
1. Remove the right cover assembly. See **"Right cover removal" on page 4-7**.
2. Remove the waste toner bottle. See **"Waste toner bottle" on page 4-49**.
3. Remove the imaging unit. See **"Imaging unit (IU) removal" on page 4-28**.
4. Remove the rear cover. See **"Right cover removal" on page 4-7**.
5. Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.
   Note: The waste toner bottle sensor contact does not need to be unplugged or removed.
6. Remove the four screws (B) securing the cable cover.



7. Turn the printer on the left side.
8. Remove the screw (C) securing the spring contacts.
9. Release the tabs (D) on the spring contact to release the spring contacts.



10. Disconnect the cable (E) from the controller board at JSC1.

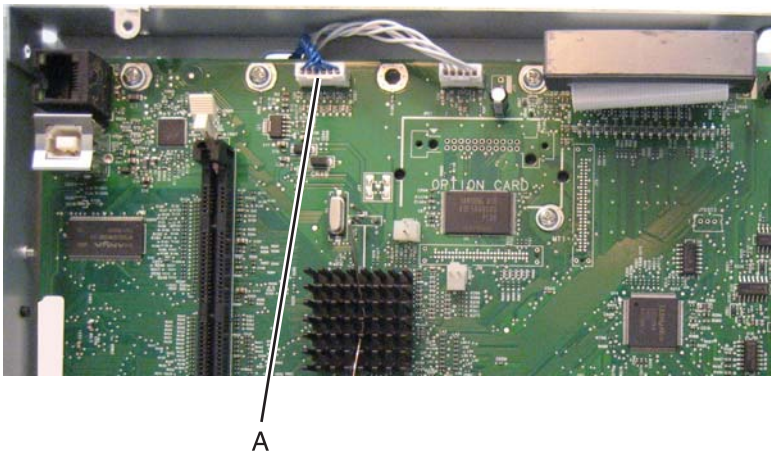


11. Remove the cable from the retainer on the bottom of the printer.

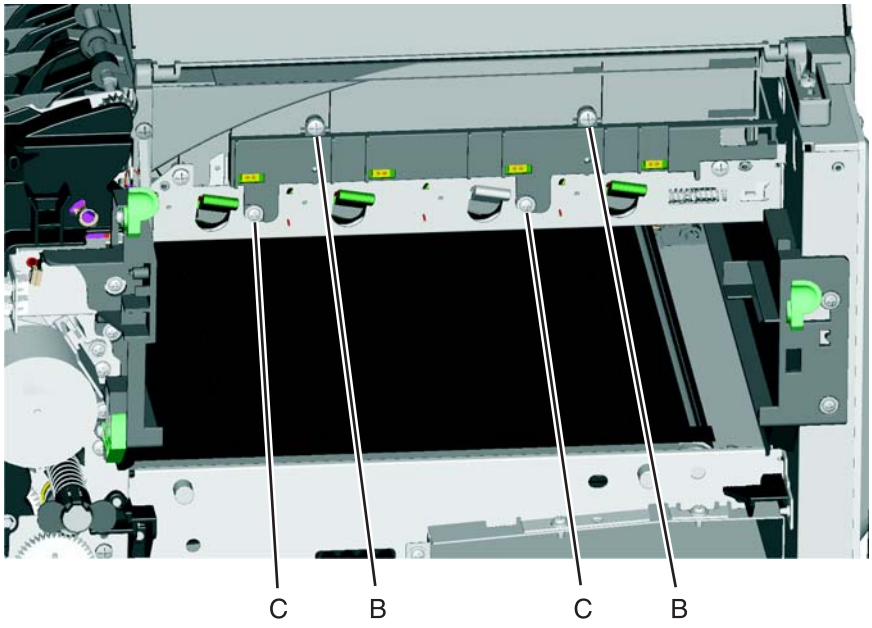
12. Extract the cable through the frame, and remove the cable with the spring contacts.

Toner meter cycle (TMC) card removal

1. Remove the right cover. See **"Right cover removal" on page 4-7**.
2. Remove the waste toner container. See **"Waste toner bottle" on page 4-49**.
3. Remove the imaging unit (IU). See **"Imaging unit (IU) removal" on page 4-28**.
4. Remove the rear shield. See **"Rear shield removal" on page 4-7**.
5. Disconnect and remove the toner meter cycle card cable (A).
   Note: Observe the routing for reinstallation.



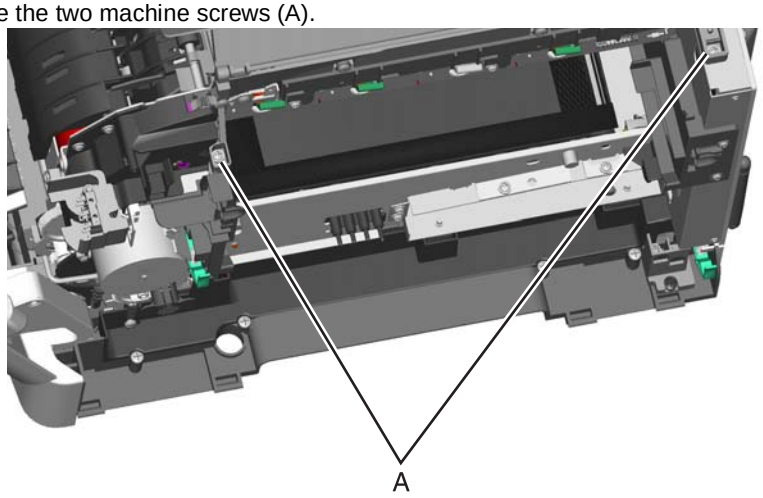
6. Remove the two plastic screws (B) and the two metal screws (C), and remove the card.



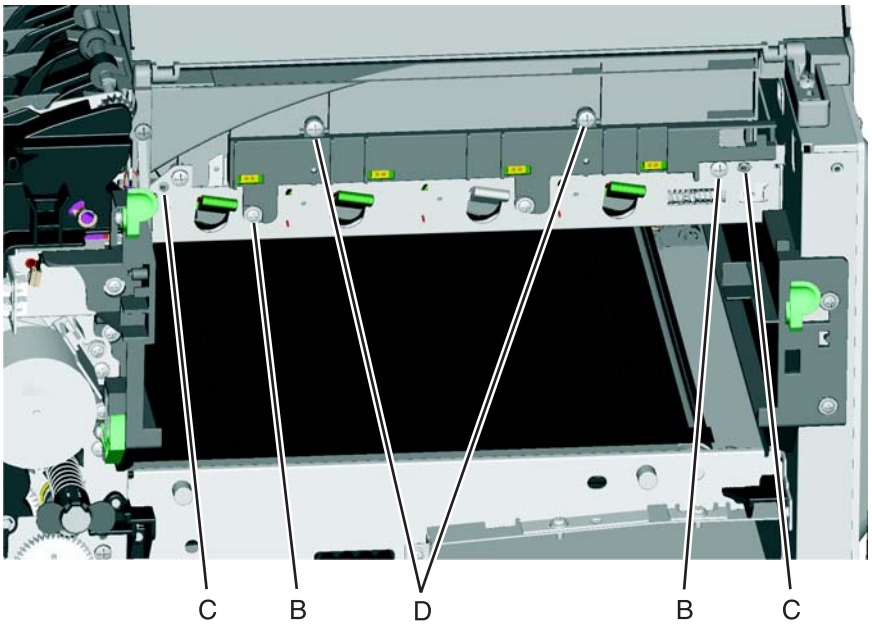
Installation note:

- Be sure the cable runs through the retainer.
- The toner meter cycle card is a tight fit. Insert the bottom edge inside the frame, and then push down on the top edge to clear the top cover.
- In some cases the top cover will have to be loosened so the right edge of the top cover can be lifted to get the toner meter cycle card back into position.

1. Remove the two machine screws (A).



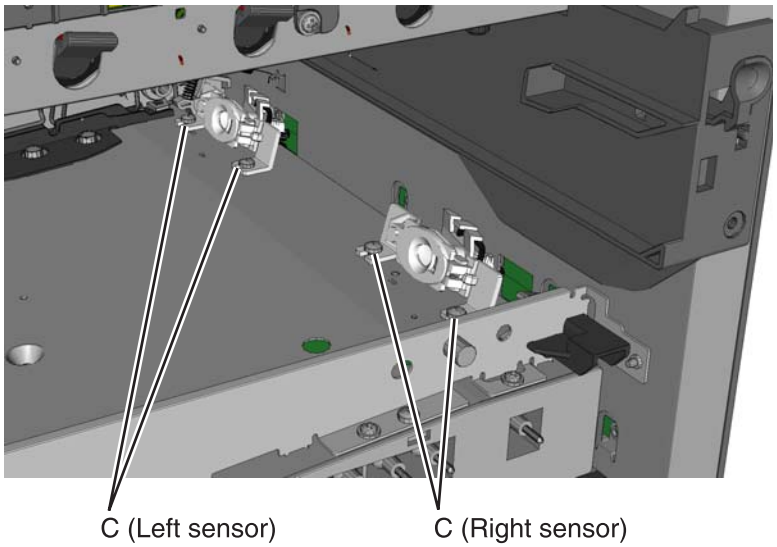
2. Remove the two screws (B).
3. Push in on the cover above the locating Pin (C) while lifting to disengage the cover. Carefully lift the cover just enough for clearance for the toner meter cycle card.
4. Position the toner meter cycle card.
5. Replace the screws (D), and replace the top cover.



Toner patch sensor (TPS)—left and right removal

The toner patch sensors are similar, but the left sensor includes an extra cable and sensing device. Remove them the same way.

1. Remove the ITU. See **"Image transfer unit (ITU)" on page 4-25**.
2. Remove the rear shield. See **"Rear shield removal" on page 4-7**.
3. Disconnect the toner density sensor cable from JTDS1 connector (A Right) or JTDS2 connector (A Left) on the controller board. If you are removing the left toner density sensor, also disconnect the thermistor from JFUSES1 connector (B) on the controller board.
   Note: Observe the routing of the cable for reinstallation.
4. Remove the two screws (C) securing the sensors.



Note: Observe the routing of the cable for reinstallation.

Installation notes

Whether you replace the left or right toner density sensors, be sure to perform the TPS Setup. Enter the 32-digit TPS value set at the factory and printed on the barcode on the toner density sensor.

1. Enter the Diagnostics Menu:
   a. Turn off the printer.
   b. press and hold ◀ and ☑.

   c. Turn on the printer.
   d. Release the buttons when the installed memory and processor speed displays.
2. Select **TPS SETUP** from Diag Menu, and press **Select** (☑).
3. Select **Right** or **Left**, and press **Select** (☑).
   TPS Right 1-16 or TPS Left 1-16 appears above a blinking 0 in the left position.
4. To enter a character or digit:
   a. press ◀ to decrease or ▶ to increase the blinking value.
   b. Pause for several seconds without pressing any buttons. The blinking value becomes solid. If the value is incorrect, use **Back** (↩) to go back and re-enter the number.
   c. Continue until the last value is reached.
   d. When the last of the 16 values is entered and becomes solid, TPS Right 17-32 or TPS Left 17-32 appears.

e. Continue entering and pausing.

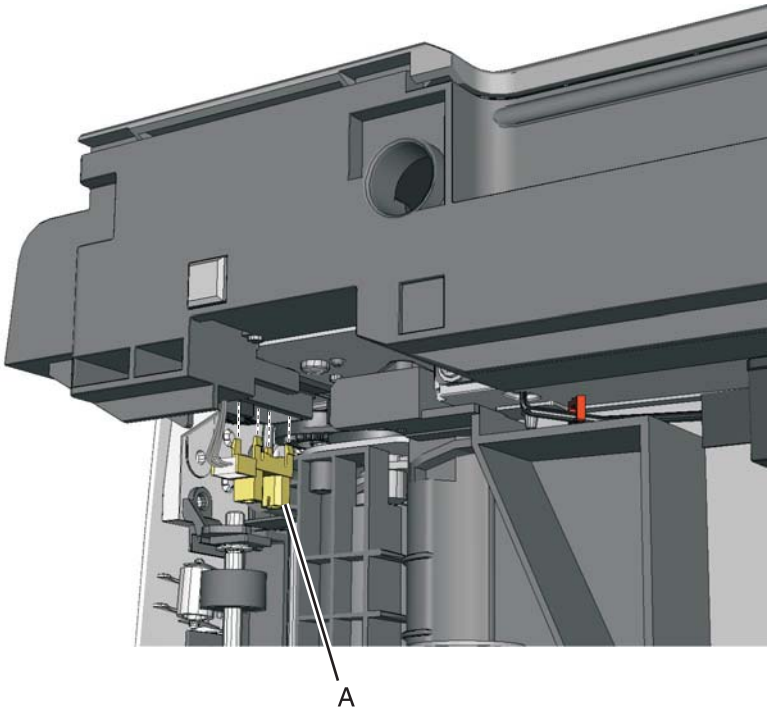
5. After the 32nd number is entered and becomes solid, the number is automatically entered.

- If the number is incorrect, Checksum does not match appears, and the original screen appears to re-enter the value.
- If the number is correct, Saving changes to NVRAM appears.

Tray present sensor removal

1. Turn the printer on the left side.

2. Unclip the tray present sensor (A) from the right lower frame.



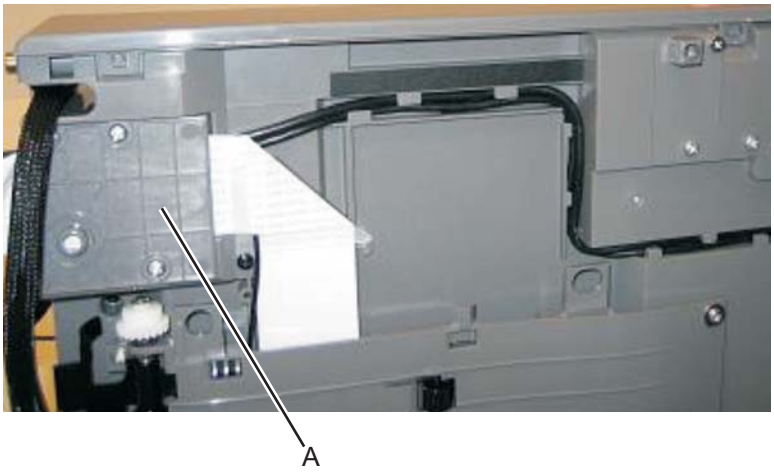
3. Disconnect the cable from the controller board.

4. Extract the cable with the sensor attached.

Note: Notice the routing of the cable for reinstallation.

USB connector removal

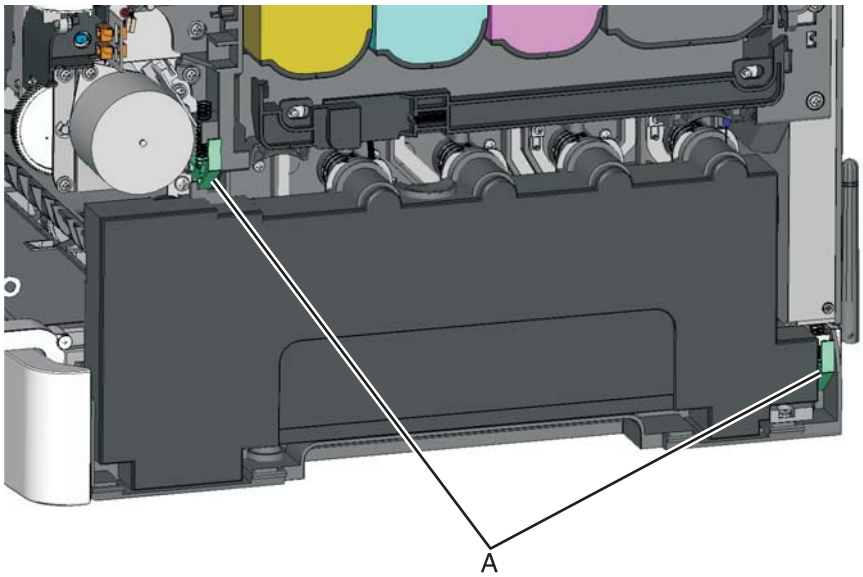
1. Remove the rear shield. See **"Rear shield removal" on page 4-7**.
2. Disconnect the USB connector (A) from the controller board.
3. Remove the flatbed assembly. See **"Flatbed removal" on page 4-53**.
   Note: Do not remove the flatbed covers, or any of the hinges. The flatbed only needs to be removed from the print engine.
4. Remove the operator panel from the flatbed assembly.**"Operator panel removal" on page 4-76**.
5. Remove the CCD ribbon cable cover (A), and route the USB cable out through the cable channel on the flatbed unit.



Waste toner bottle

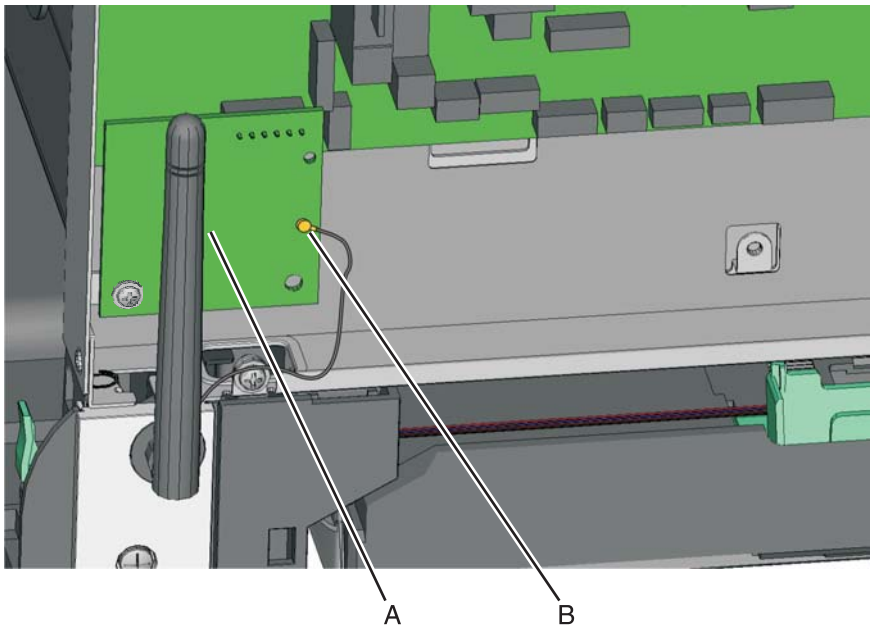
The waste toner bottle is a customer replaceable unit.

1. Open the front cover.
2. Lift the toner cover.
3. Remove the right cover assembly. See **"Right cover removal" on page 4-7**.
4. press the two tabs (A) to release the waste toner bottle, and remove it.

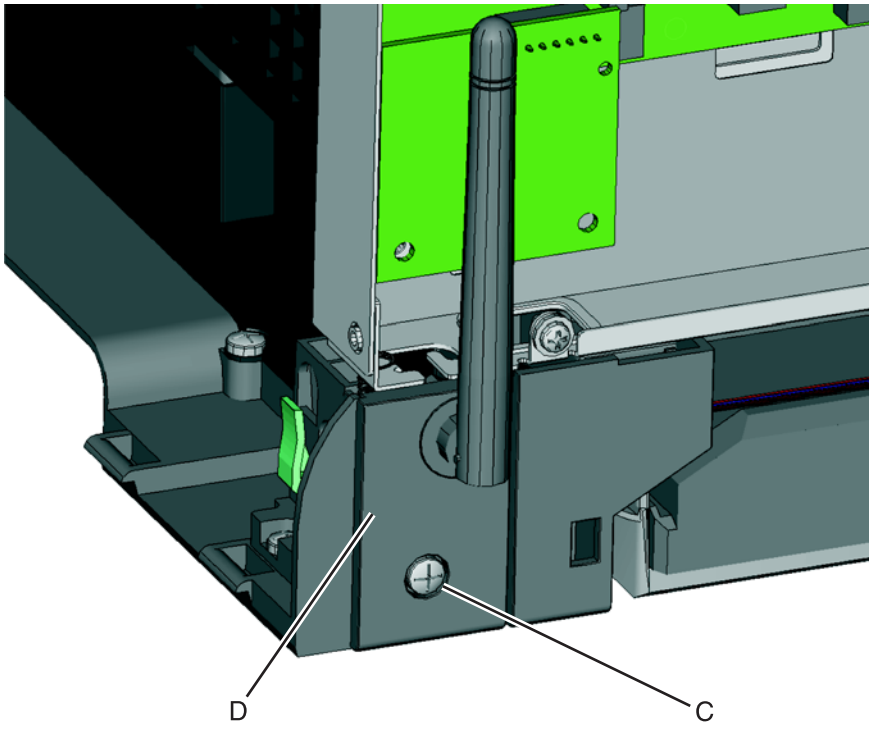


Wireless network antenna

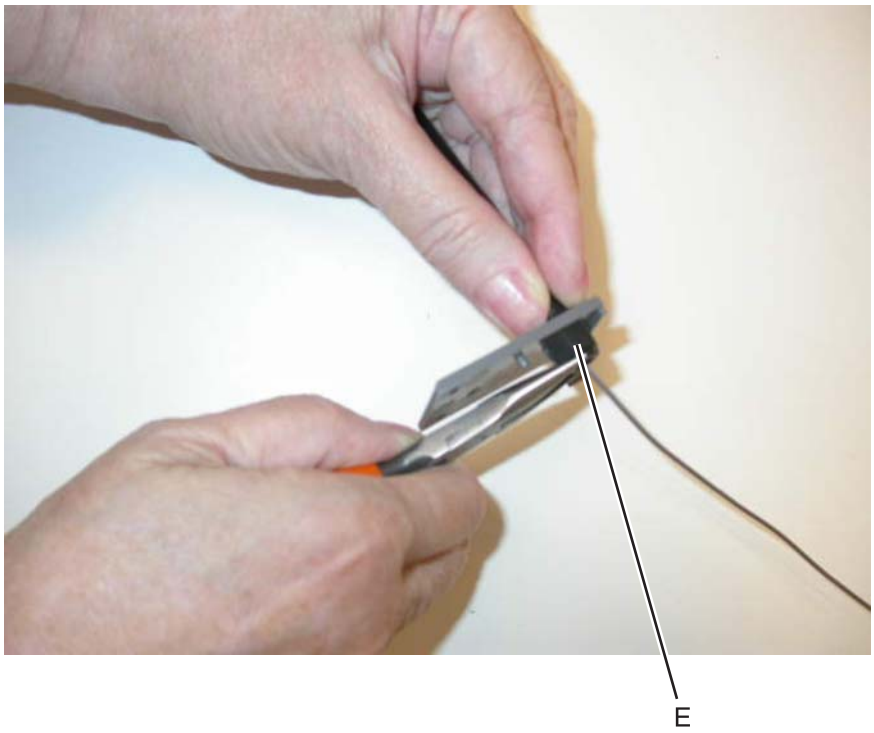
1. Remove the rear shield. See **“Rear shield removal” on page 4-7**.
2. Lift to disconnect the wireless card (A) from the controller board.
3. Carefully disconnect the antenna cable (B) from the wireless card at the card.



4. Remove the screw (C) that secures the antenna cover (D) to the frame, and remove the antenna cover and antenna.

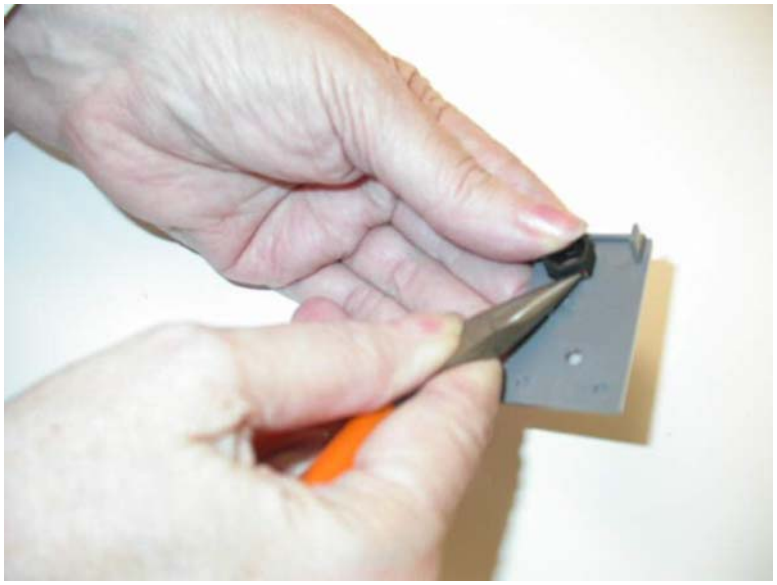


5. Straighten the antenna perpendicular to the cover, push against the cover with your fingers, and gently squeeze the fastener (E) with needlenose pliers. Slide the antenna cable and cable through the hole in the bracket.



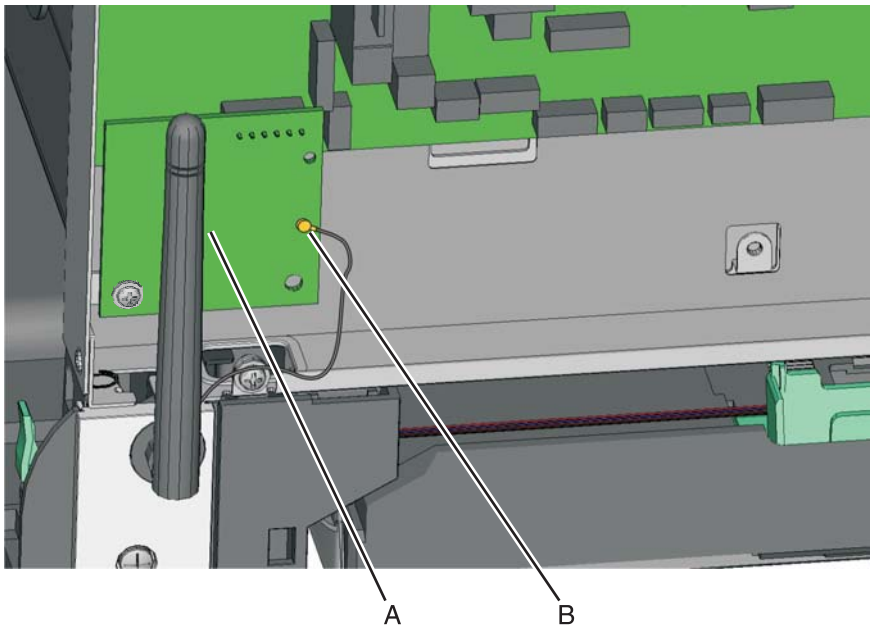
6. If the fastener is damaged, remove the fastener by pressing the tabs on each side.

Note: Take note of the orientation of the fastener. When reinstalling, place the cover upright, bend the antenna as it would be positioned, and make sure the antenna can move about 30° in each direction from the perpendicular.



Wireless network card

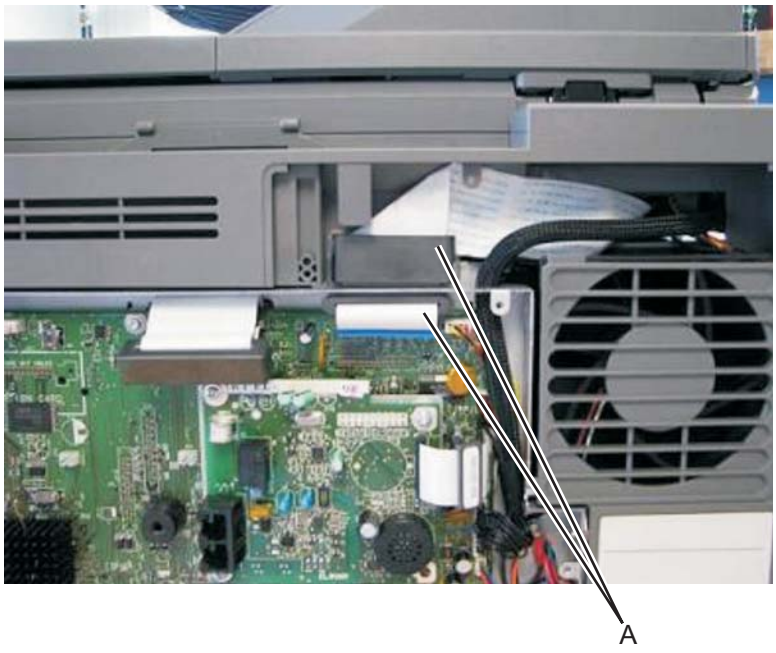
1. Remove the rear shield. See **“Rear shield removal” on page 4-7**.
2. Lift to remove the wireless card (A) from the controller board.
3. Carefully disconnect the antenna cable (B) from the wireless card at the card.



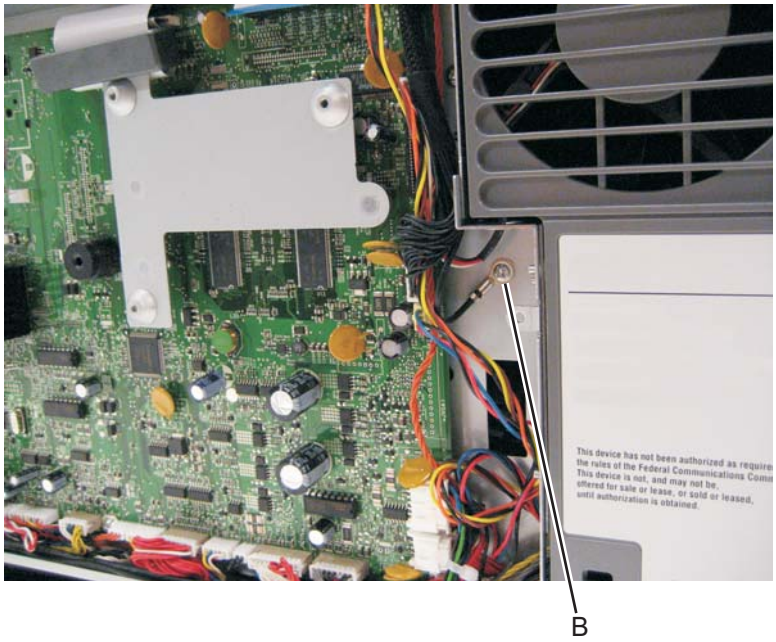
Scanner component removal procedures

Flatbed removal

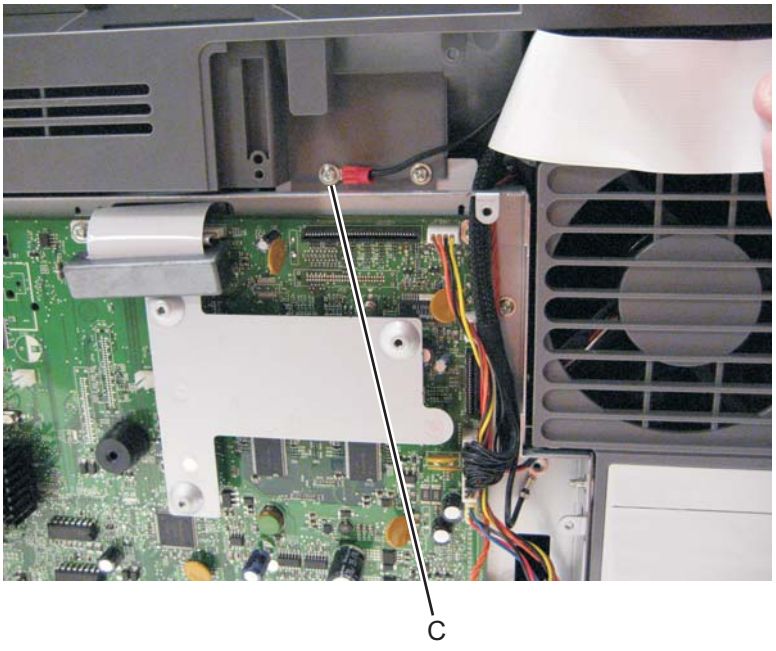
1. Remove the AIO rear cable cover. See **“AIO back cable cover removal” on page 4-8**.
2. Remove the rear shield. See **“Rear shield removal” on page 4-7**.
3. Remove the left cover. See **“Left cover removal” on page 4-4**.
4. Remove the ADF unit. See **“Duplex ADF removal” on page 4-63** or **“Simplex ADF removal” on page 4-64**.
5. Disconnect the CCD cable form JCCD1 on the controller board.
6. Remove the toroids (A) from the CCD cable. The toroids will be reused on the new flatbed unit.



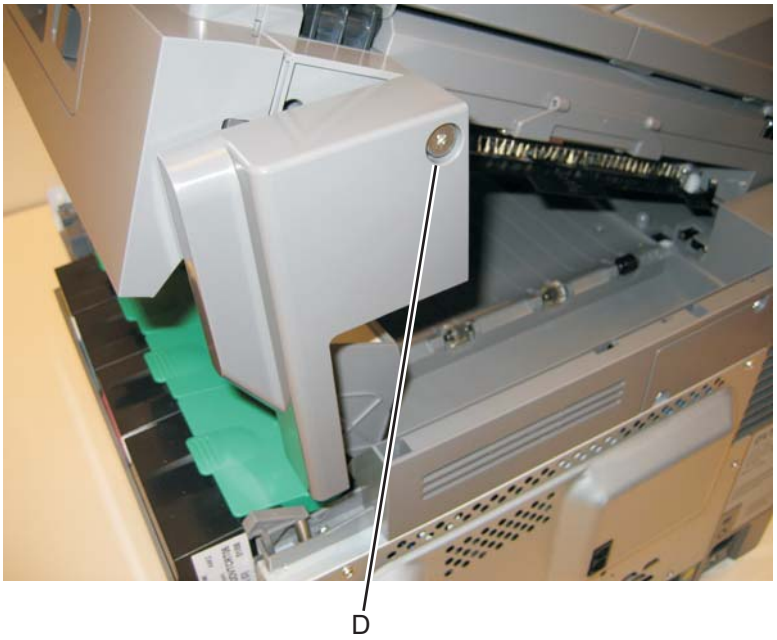
7. Disconnect the ADF cable ground wire (B) from the frame.



8. Disconnect JADF1, and route the cable through the top of the card cage.
9. Disconnect the USB cable from JUSB1, op panel cable from JOPP1, flatbed home sensor cable from JHS1, and flatbed motor cable from JFBM1. Route the cables through the right side of the card cage.
10. Disconnect the ground wire (C) connecting the redrive unit to the print engine frame.

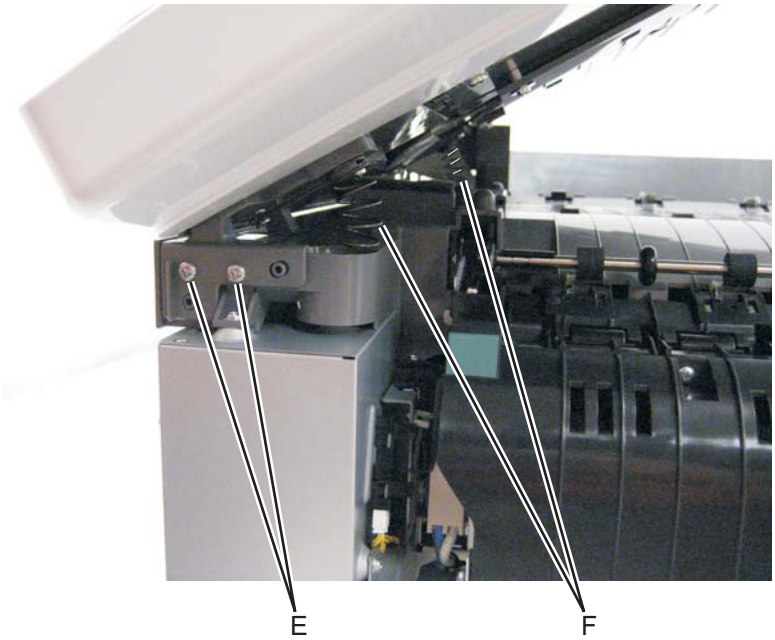


11. Disconnect the screw (D) connecting the flatbed to the AIO link on the rear of the MFP.



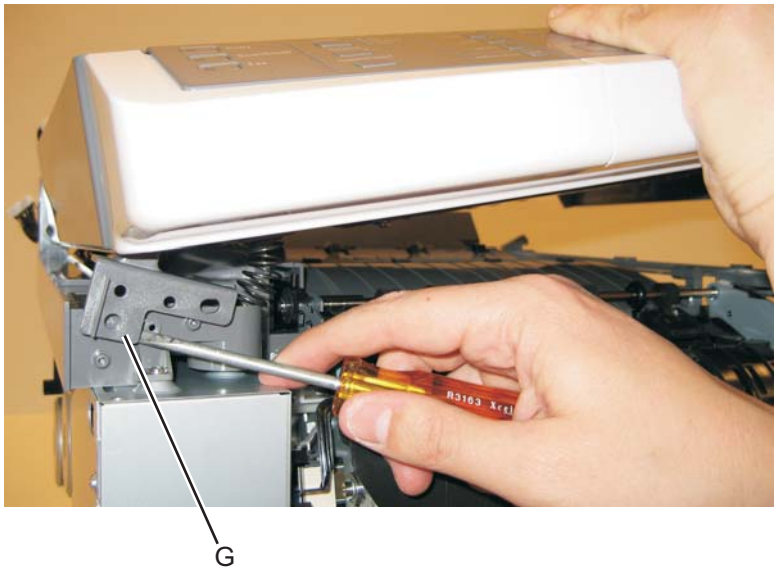
12. Carefully disconnect the AIO link from the flatbed.

13. Remove the two screws (E) securing the flatbed hinge to the top cover.



14. Remove the two springs (F) between the flatbed and top cover.

15. Gently push the front flatbed hinge (G) towards the front of the top cover to disengage it from the top cover guide Pin.



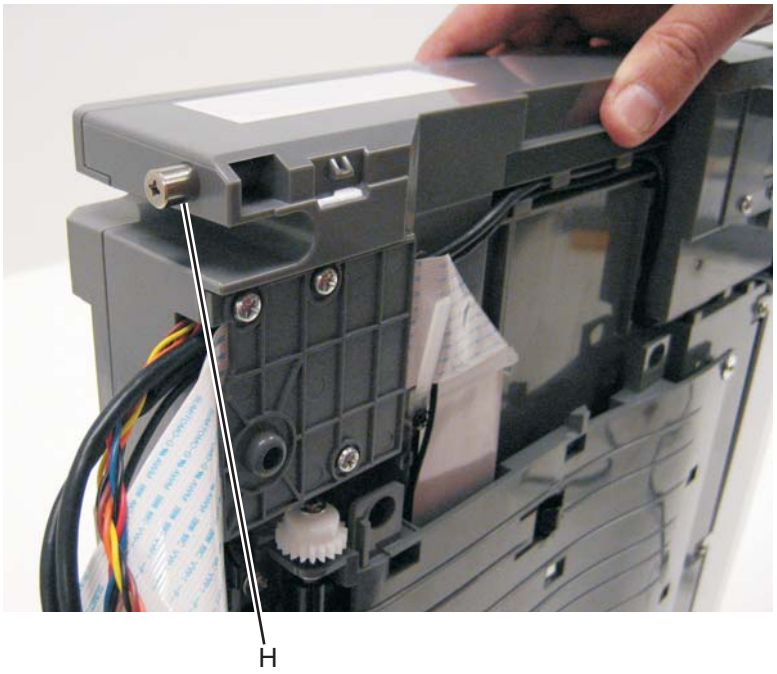
16. Carefully pull the flatbed unit towards the front of the MFP while using your other hand to route the cables through the top cover.

17. Remove the CCD ribbon route cover and homing guide attachment.

18. Disconnect the op panel ground termination from the LVPS.

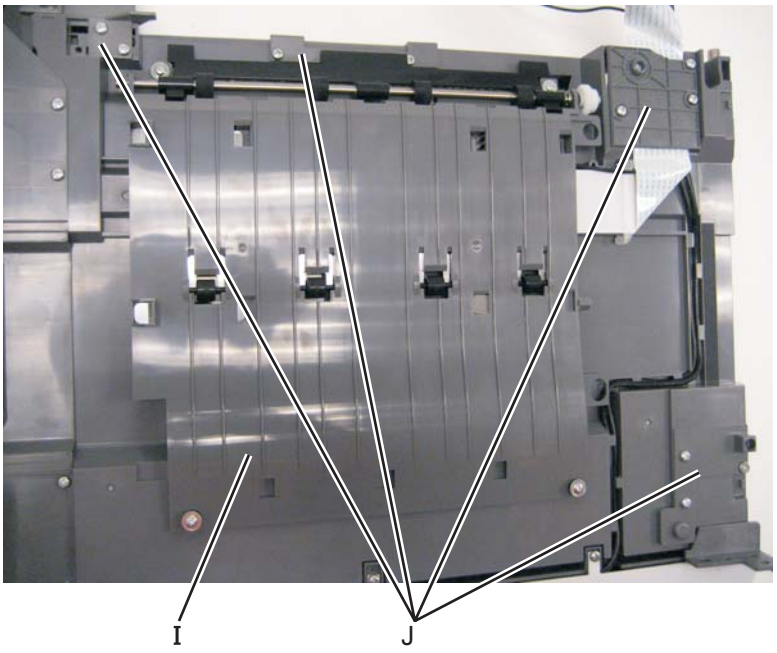
Note: This completes the removal of the flatbed assembly from the print engine. The removals for the FRUs attached to the flatbed are covered under different removal procedures. In addition to the FRUs, the following steps illustrate the additional parts that need to be removed from the old flatbed and transferred to the new flatbed.

19. Remove the steel hinge stud (H). Save this for use on the replacement flatbed.



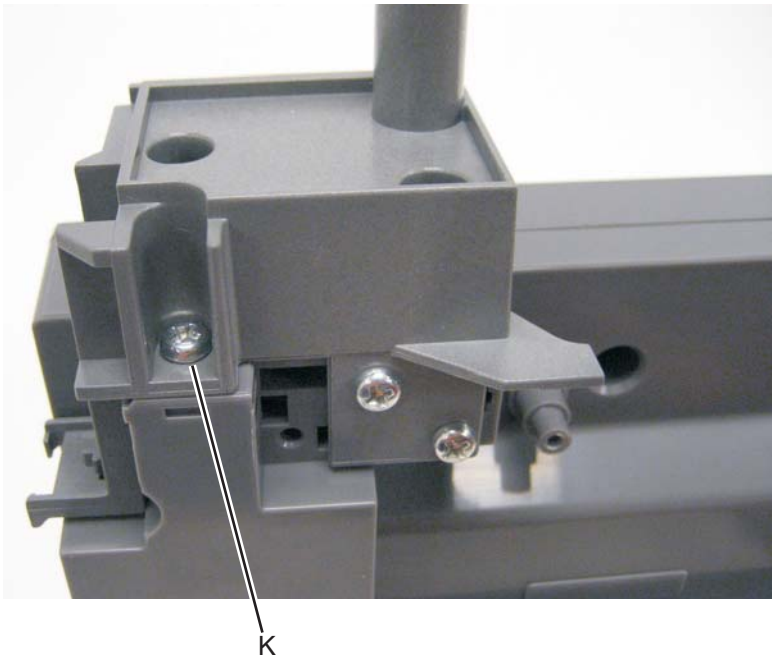
20. Remove the redrive (I) See**"Redrive unit" on page 4-69**.,

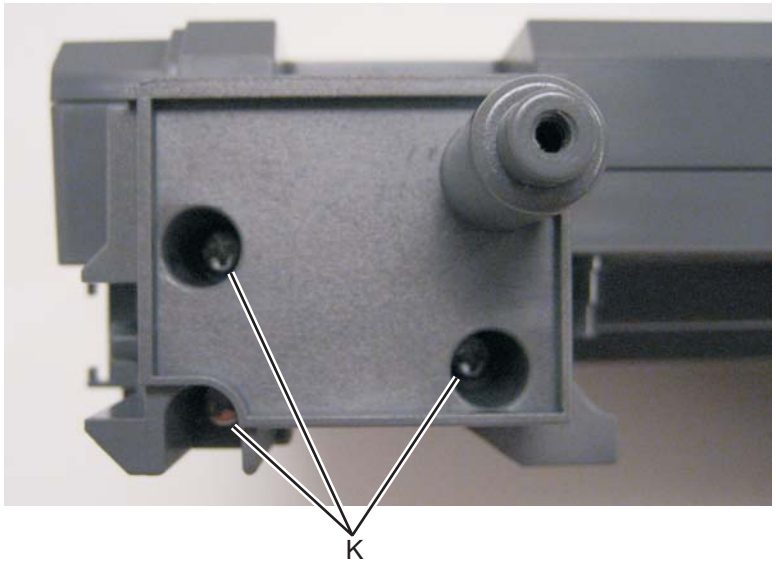
21. Remove the cable cover plates and scanner homing plates (J). These will be used on the replacement flatbed unit.



Warning: When replacing the rear cable cover plate, the cables must be routed as shown above. Failure to do so could damage the cables and lead to possible paper skews and jamming.

22. Remove the screws (K) securing the front hinge to the flatbed.





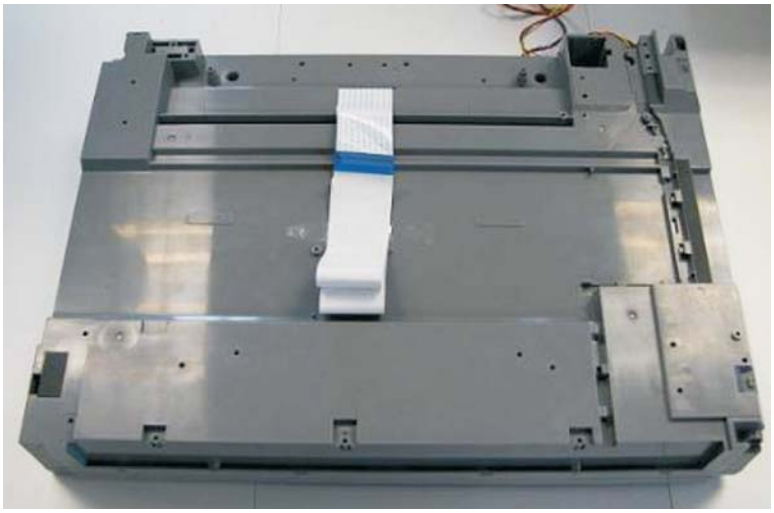
23. Remove the hinge; it will be used on the replacement flatbed unit.

Note: The redrive, cable covers, operator panel assembly, scanner flatbed guides, op panel cable, and USB cable need to be transferred to the replacement flatbed unit.

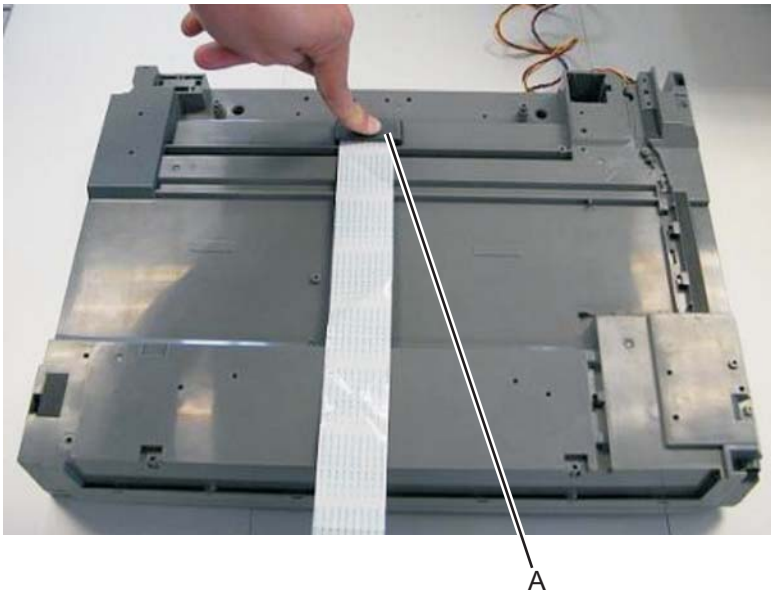
Note: After replacing the flatbed unit, you will need to perform the flatbed registration procedure. See **"Scanner Manual Registration" on page 3-35**.

Preparing and installing re new flatbed

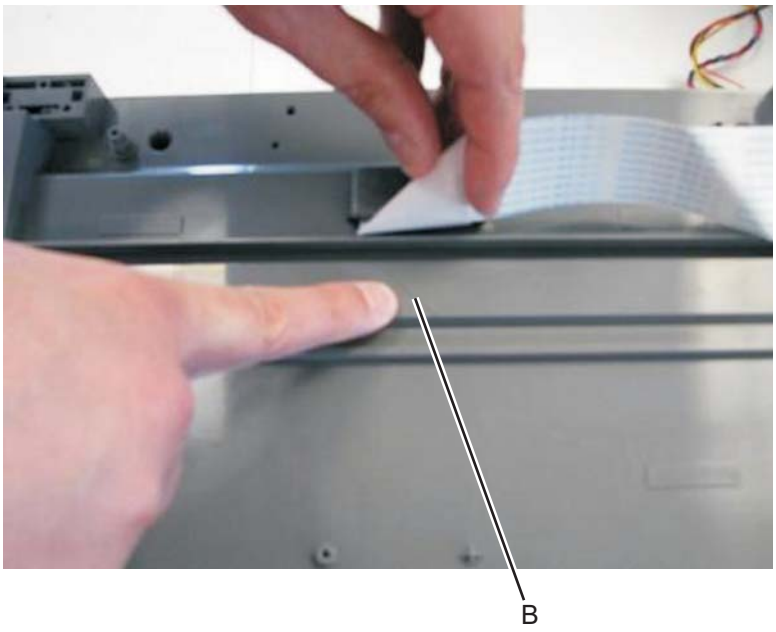
1. Unbox the scanner, and place it top down on a non-marring surface.



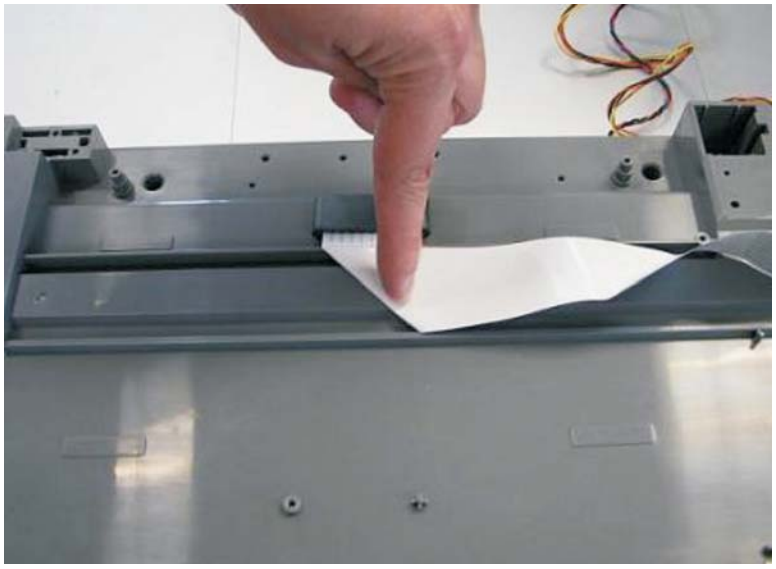
2. Unfold the ribbon cable, and replace the toroid (A) from the old flatbed.



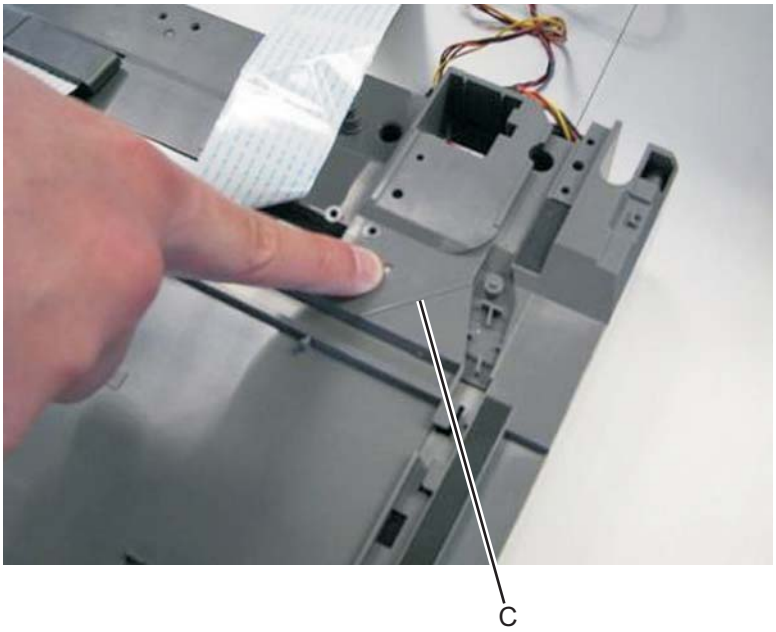
3. Locate the folding guide line (B), and remove the paper from the adhesive strip located next to the folding guide line on the scanner.



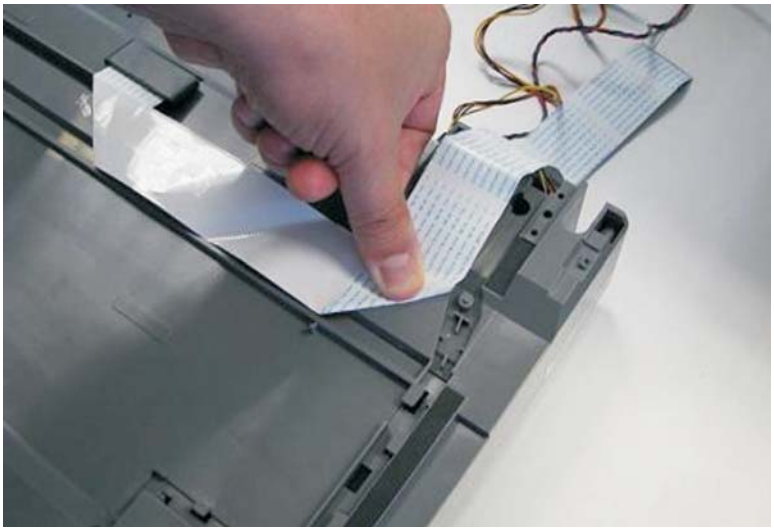
4. Fold the ribbon cable at a 90 degree angle, align the fold of the cable with the fold line on the flatbed, and press the cable down on the adhesive so it adheres to the flatbed.



5. Locate the second folding guide line (C), and remove the paper from the adhesive strip.



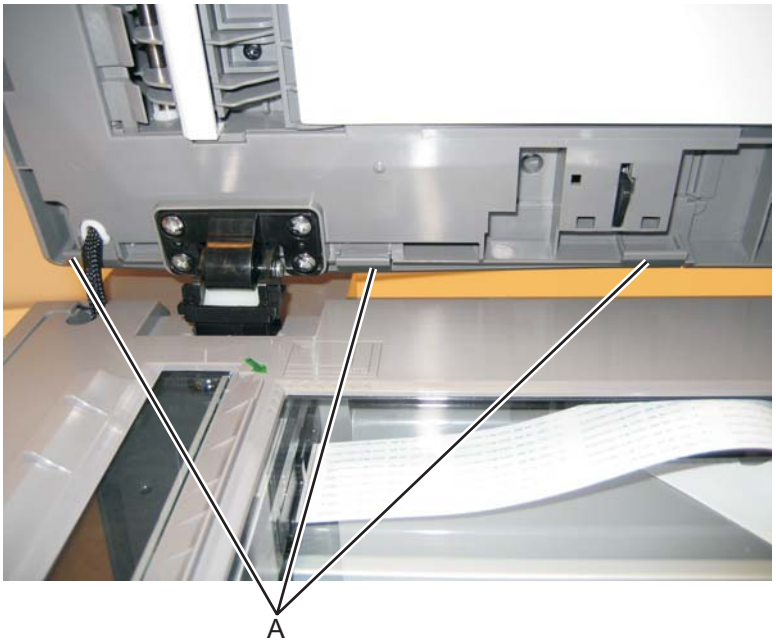
6. Fold the ribbon cable a second time at a 90 degree angle, align the fold of the cable with the fold line on the flatbed, and press the cable down on the adhesive so it adheres to the flatbed. The ribbon cable should lie flat against the flatbed, and there should be no slack on the ribbon cable between the two folds.



7. Replace the plastic front hinge from the old scanner.
8. Replace the cable cover plates and scanner alignment guides from the old scanner.
9. Replace the steel hinge stud from the old scanner.
10. Replace the redrive unit, AIO release lever, side covers, and operator panel.

Duplex ADF rear cover

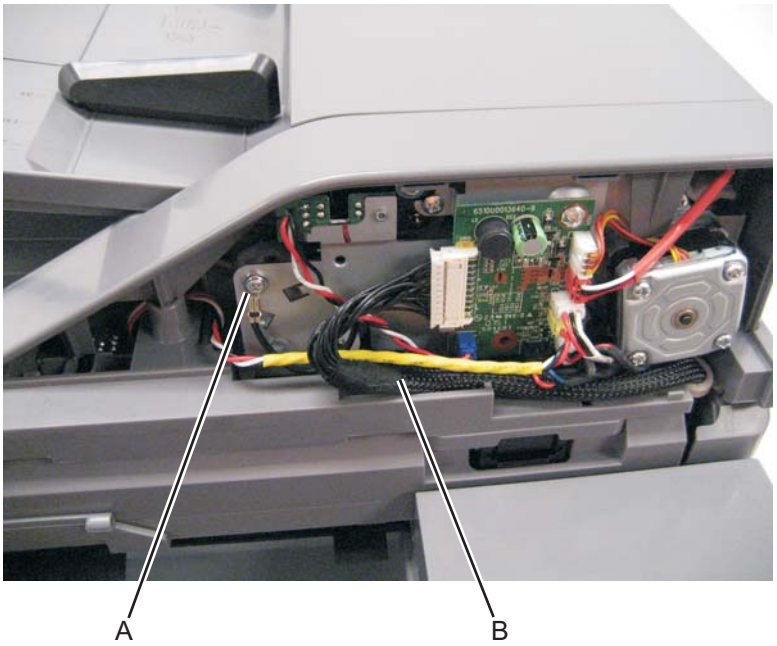
1. While lifting the ADF, use a flatblade screwdriver to pry open the three tabs (A) on the bottom of the ADF cover.



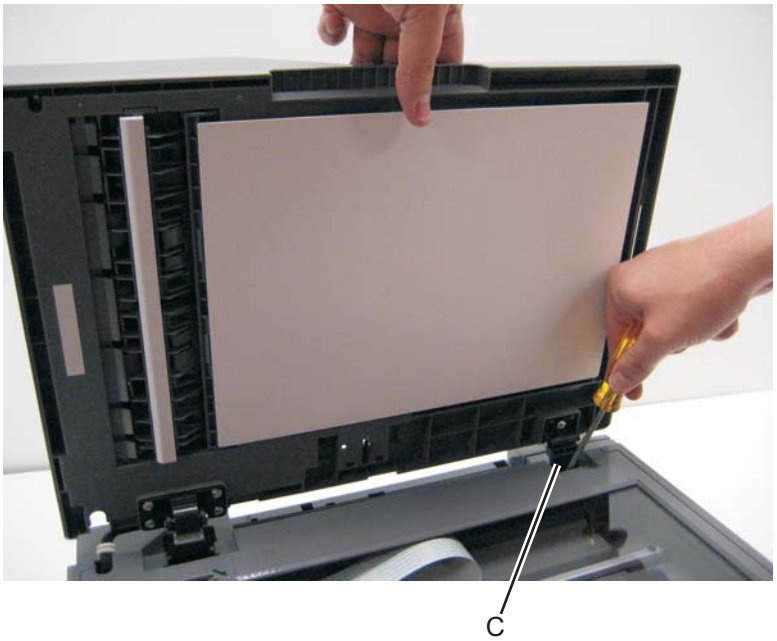
2. Lift and remove the rear cover from the ADF assembly.

Duplex ADF removal

1. Remove the duplex ADF rear cover from the ADF assembly. See **"Duplex ADF rear cover" on page 4-62**. Save the cover for use on the new ADF unit.
2. Disconnect the ground cable (A) from the ADF assembly.



3. Disconnect the ADF cable (B) from the ADF card located on the ADF assembly.
4. Carefully pull the ADF cable and grommet away from the ADF assembly.
5. Lift the ADF to an upright position.
6. Use a screwdriver to release the right hinge (C) from the flatbed unit.



7. Remove the ADF assembly.
   Note: After installing the new ADF unit, you will need to perform the duplex ADF registration procedure. See **"Scanner Manual Registration" on page 3-35**.

Simplex ADF rear cover

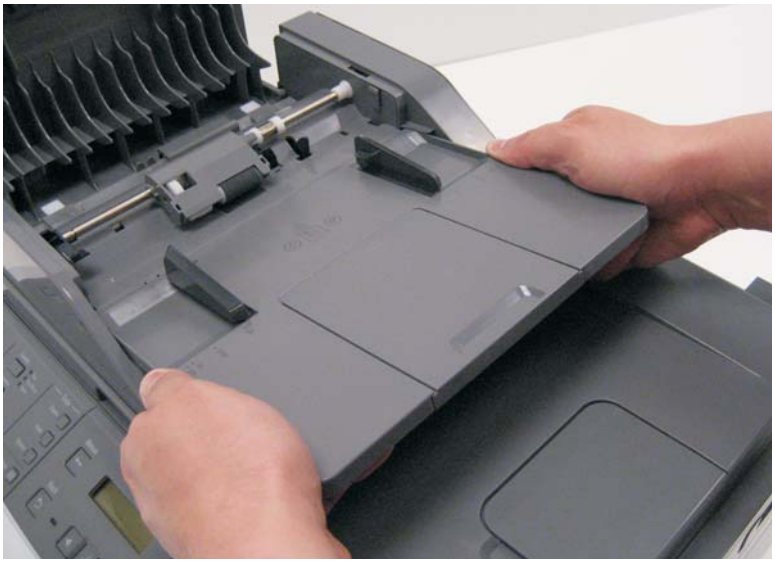
1. While lifting the ADF, use a flatblade screwdriver to pry open the two tabs on the bottom of the ADF cover.
2. Lift and remove the rear cover from the ADF assembly.

Simplex ADF removal

1. Tilt the flatbed cover to the upright position.
2. Lift the ADF up and away from the flatbed.
3. Remove the simplex ADF rear cover from the ADF assembly. See **“Simplex ADF rear cover” on page 4-64**. Save the cover for use on the new ADF unit.
4. Disconnect the ADF cable from both the ADF relay card located on the ADF assembly.
5. Disconnect the ground cable from the ADF assembly.
6. Carefully pull the ADF cable and grommet away from the ADF assembly.
7. Lift the ADF to an upright position.
8. Use a screwdriver to release the left hinge from the flatbed unit.
9. Remove the ADF assembly.
   Note: After installing the new ADF unit, you will need to perform the ADF registration procedure. See **“Scanner Manual Registration” on page 3-35**.

ADF input tray

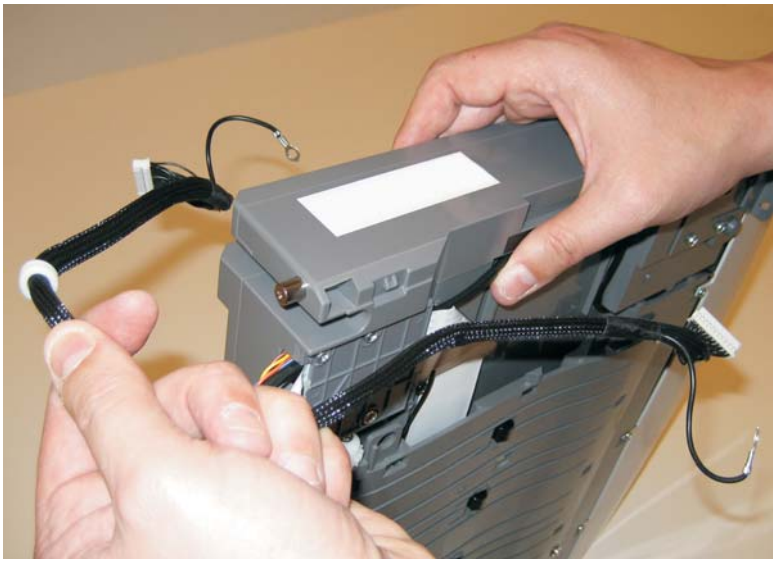
1. Firmly grasp the ADF input tray on both sides.



2. Pull the ADF input tray out of the ADF.

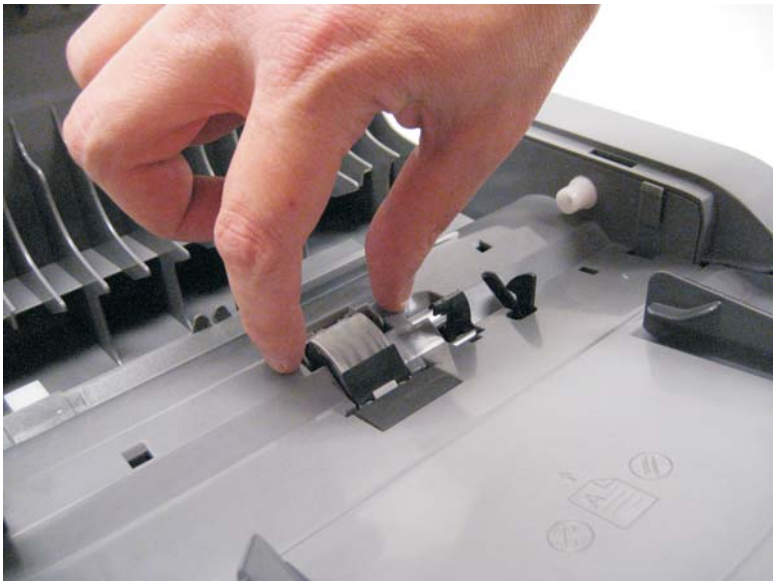
ADF cable

1. Remove the flatbed assembly. See **“Flatbed removal” on page 4-53**.
2. Remove the left scanner cover. See **“Cover scanner left” on page 4-70**.
3. Remove the cable from the channel in the flatbed.

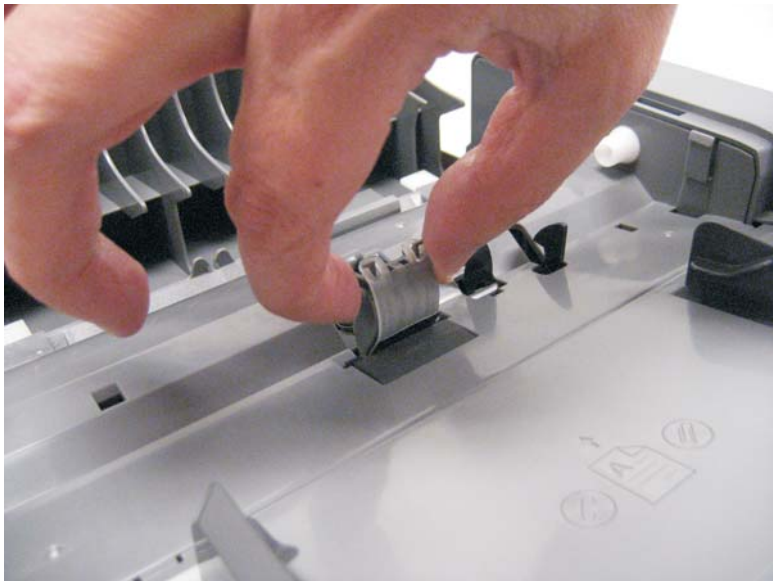


ADF separator pad

1. Remove the ADF separator roll. See **“ADF separator roll assembly” on page 4-67**.
2. Pinch the two tabs on each side of the pad inward.

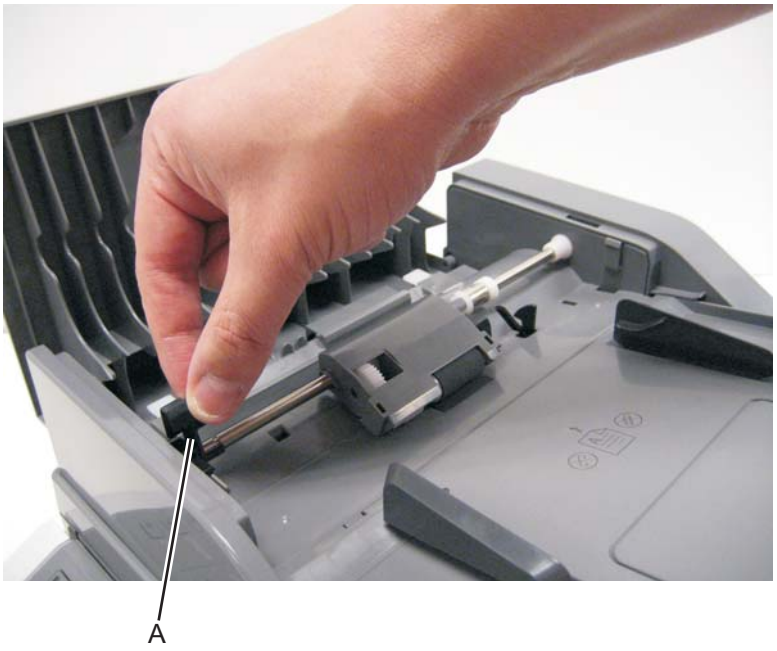


3. Tilt the pad up, and lift it out of the ADF assembly.

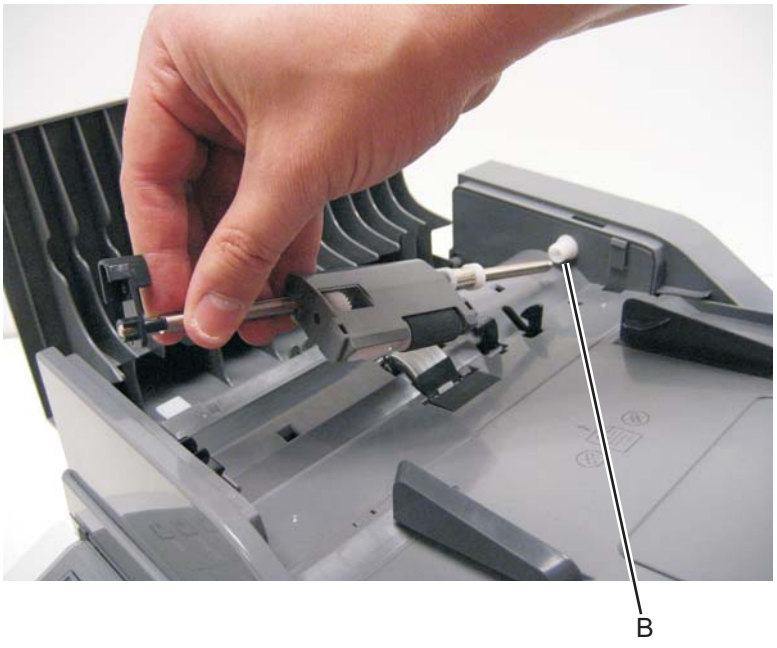


ADF separator roll assembly

1. Lift the locking lever (A).

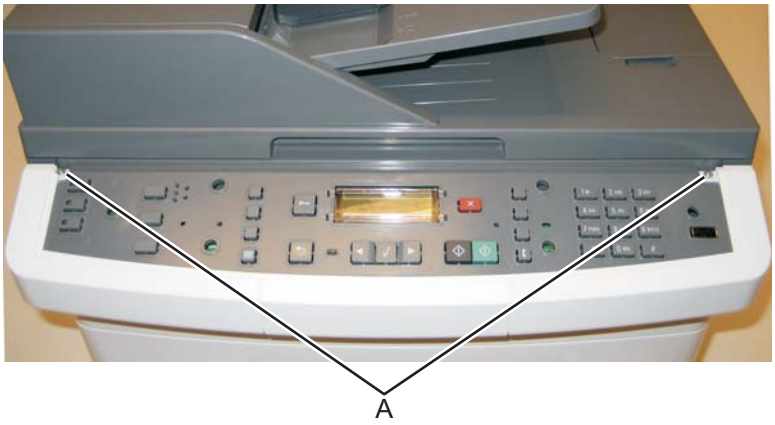


2. Slightly lift the separator roll assembly, and pull it out of the mount (B) on the opposite side.

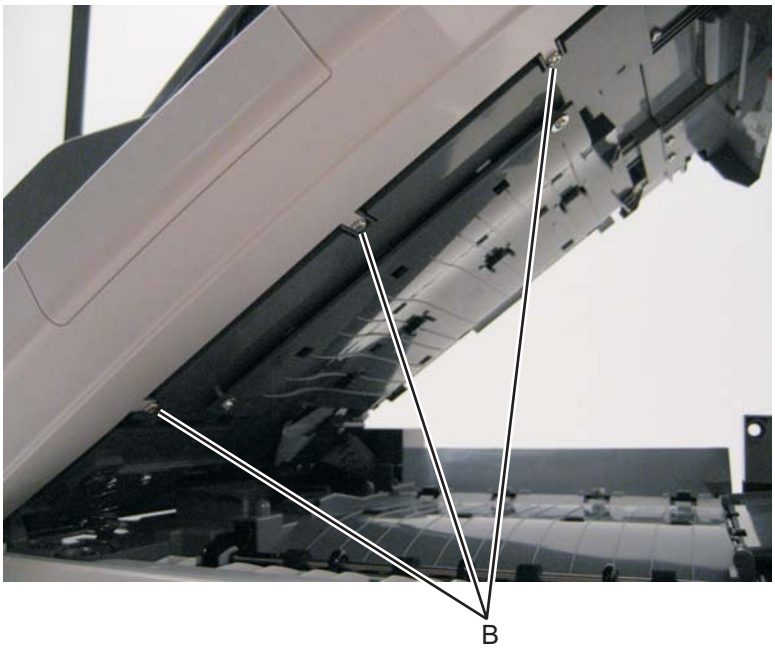


Bezel cover

1. Remove the op panel bezel. See **"Op panel bezel removal" on page 4-78**.
2. Remove the two screws (A) securing the bezel cover to the top of the op panel mounting frame.



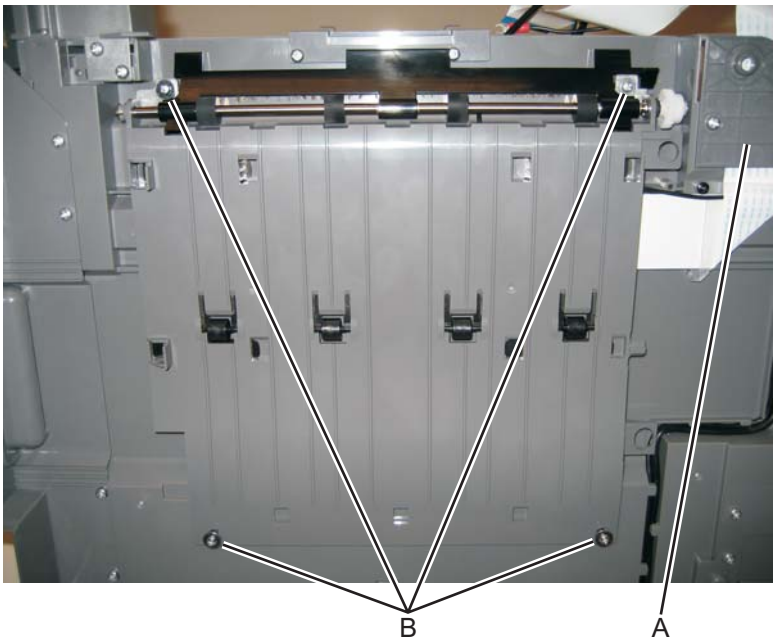
3. Remove the AIO link. See **"AIO link" on page 4-74**.
4. Lift the flatbed unit to a 45 degree angle. Be careful to avoid damaging or disconnecting the CCD ribbon cable on the rear of the flatbed.
5. While holding the flatbed in place, remove the three screws (B) securing the bezel cover to the op panel mounting frame and flatbed.



6. While holding the op panel mounting assembly, remove the op panel bezel cover.

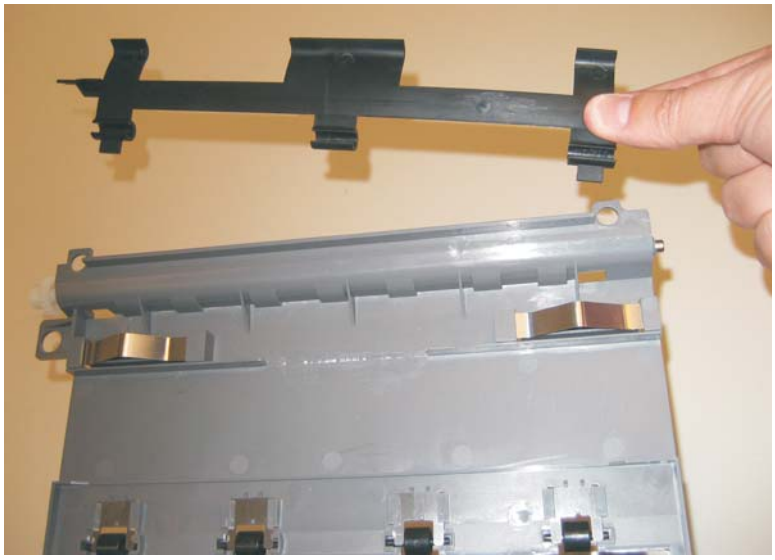
Redrive unit

1. Remove the flatbed assembly from the MFP. See **"Flatbed removal" on page 4-53**.
2. Place the flatbed facedown on a soft surface to avoid scratching the glass or marring the covers.
3. Remove the cable cover plate (A).



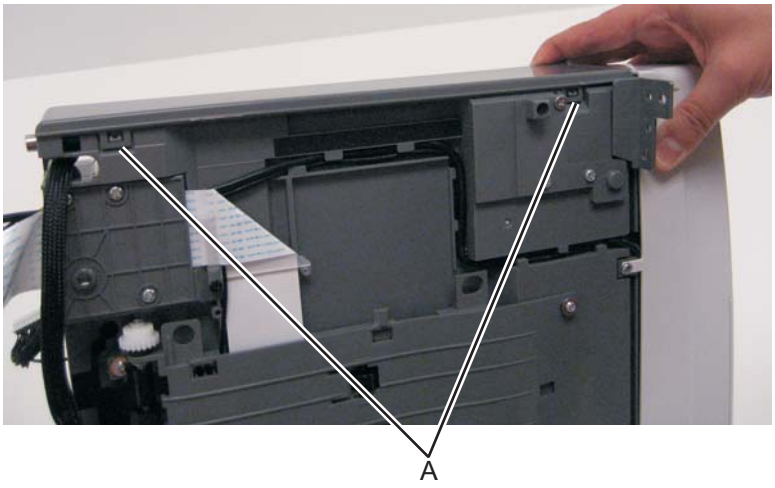
4. Remove the four screws (B) securing the redrive to the flatbed unit.

5. Remove the bin full sensor flag located on the rear shaft.



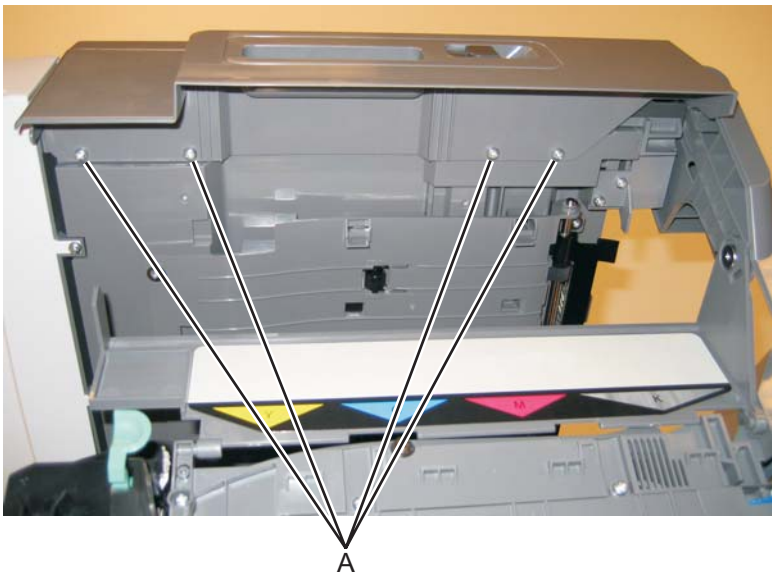
Cover scanner left

1. Remove the flatbed assembly. See **“Flatbed removal” on page 4-53**.
2. Release the tabs (A) securing the left flatbed cover to the flatbed unit using a small flatblade screwdriver.



Cover scanner right

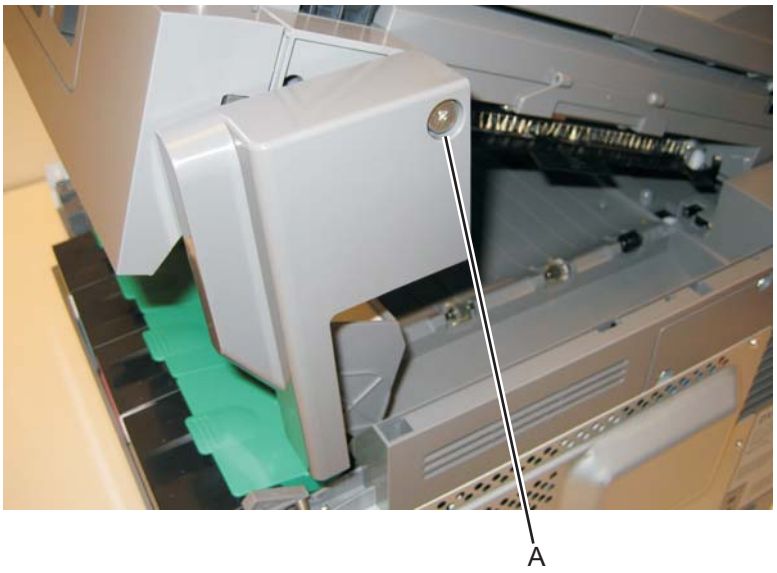
1. Remove the imaging unit in the print engine.
2. Raise the scanner assembly to the up position, and lock in place.
3. Remove the four screws (A) securing the right scanner cover to the flatbed unit.



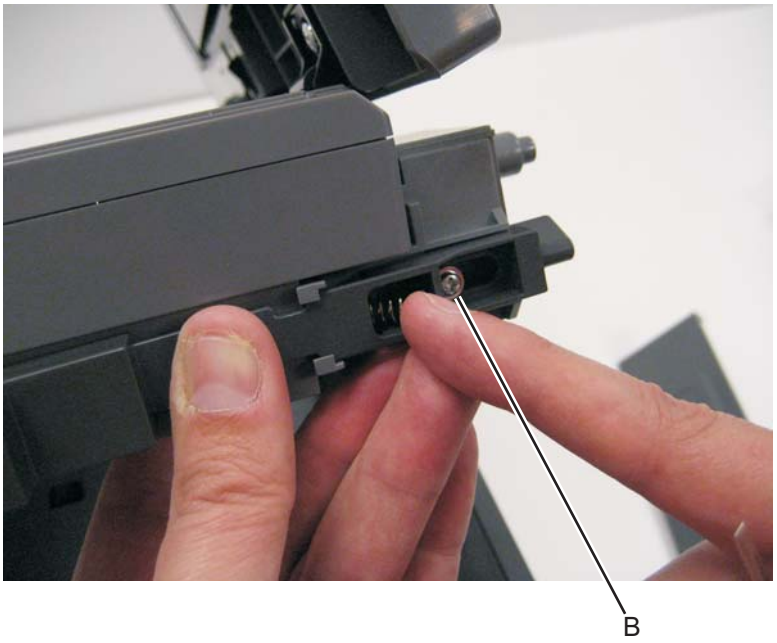
4. While holding the ADF away from the flatbed, use the other hand to lift and disengage the right scanner cover from the flatbed unit.

AIO release lever

1. Remove the right scanner cover. See **"Cover scanner right" on page 4-71**.
2. Remove the screw (A) securing the AIO link to the flatbed unit.



3. Disengage the AIO link from the flatbed unit.
4. Remove the screw (B) securing the AIO release lever to the flatbed.

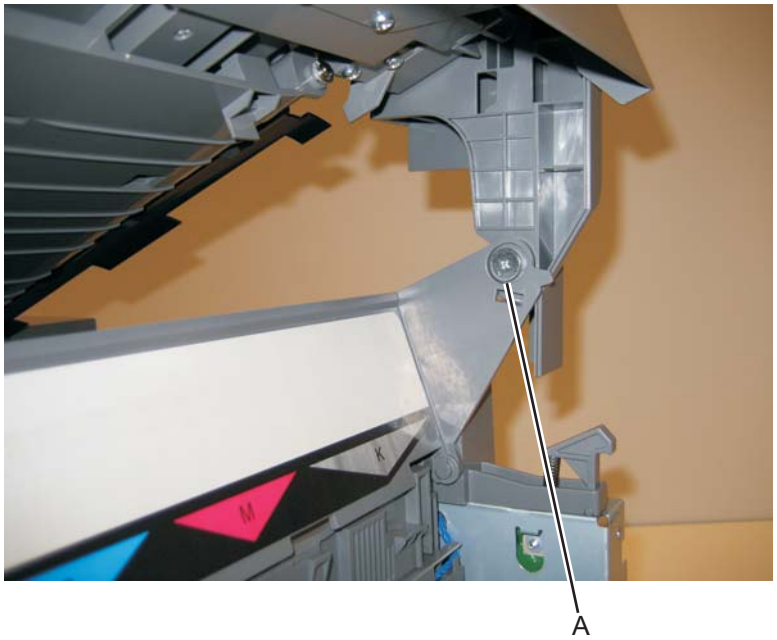


5. Slide the AIO release lever towards the back of the flatbed.
6. Remove the spring and AIO release lever.

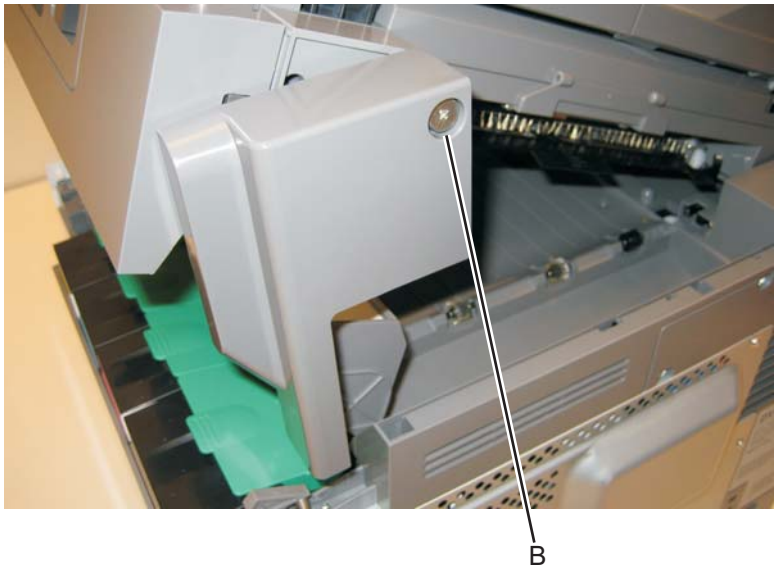
   Note: When reinstalling the AIO release lever, place the release lever on the flatbed, and then inset the spring before replacing the screw.

AIO link

1. Lift the scanner to the up position. Use a phillips screwdriver to remove the screw (A) securing the AIO link to the AIO toner cover.

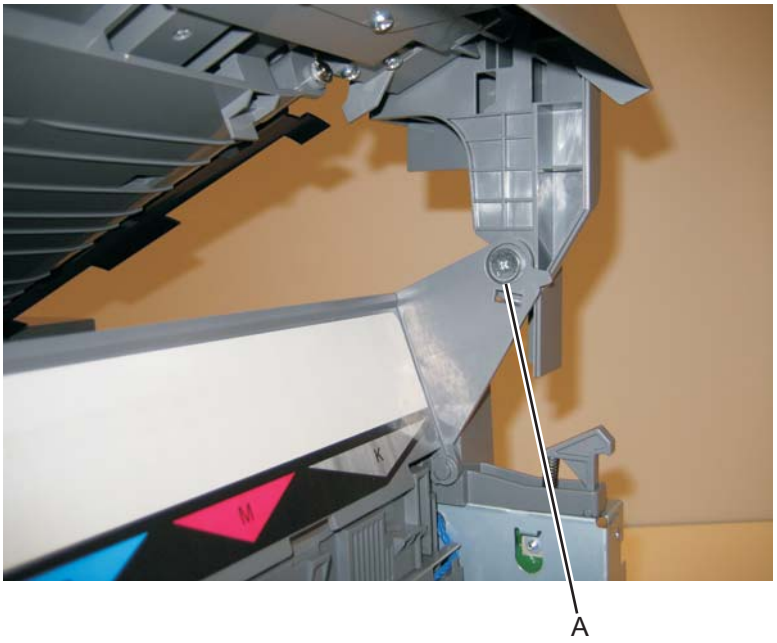


2. Return the flatbed to the down position.
3. Remove the screw (B) securing the AIO link to the flatbed unit.



AIO toner cover

1. Lift the scanner unit to the up position.
2. Remove the screw (A) fastening the AIO toner cover to the scanner unit.



3. Remove the screw (B) securing the AIO hinge to the MFP.

4. Remove the hinge. Save this for the new AIO toner cover.
5. Rotate the AIO toner cover so the tab (C) on the cover lines up with the hole on the AIO toner cover.
6. Pull the AIO toner cover to the left, and remove it from the printer.

Operator panel removal

Warning: When replacing any one of the following components:

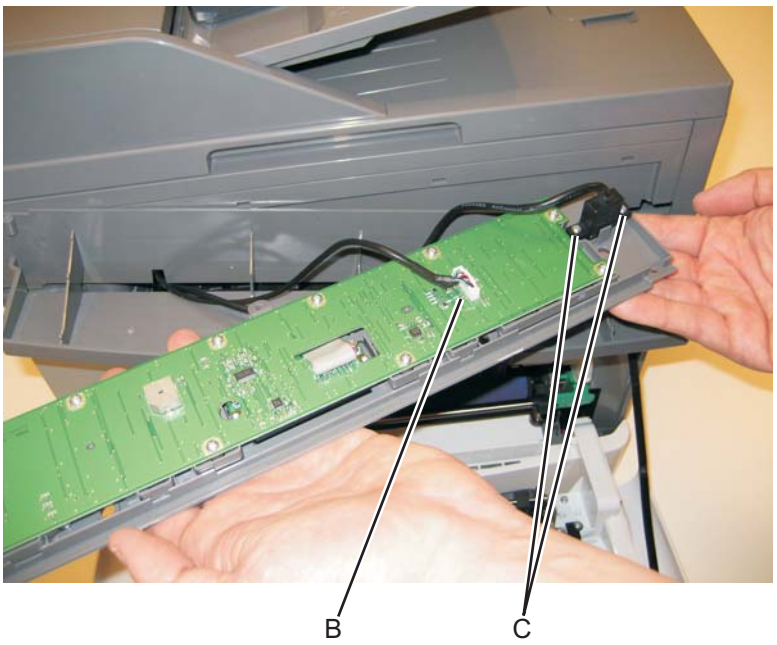
- Operator panel assembly
- Controller board

Replace only one component at a time. Replace the required component, and perform a POR before replacing a second component listed above. If this procedure is not followed, the printer will be rendered inoperable. Never replace both of the components listed above without a POR after installing each one, or the printer will be rendered inoperable.

Warning: Never install and remove components listed above as a method of troubleshooting components. Once a component has been installed in a printer, it cannot be used in another printer. It must be returned to the manufacturer.

1. Remove the op panel bezel cover. See **"Op panel bezel removal" on page 4-78**.
2. Remove the left cover. See **"Left cover removal" on page 4-4**.
3. Disconnect the ground wire from the LVPS cage.
4. Remove the one screw (A) attaching the operator panel to the op panel mounting frame.

5. Disconnect the operator panel cable (B).



6. Remove the two screws (C) attaching the USB connector to the operator panel. Set the USB connector aside to attach to the new operator panel.

7. Remove the ground wire from the op panel.

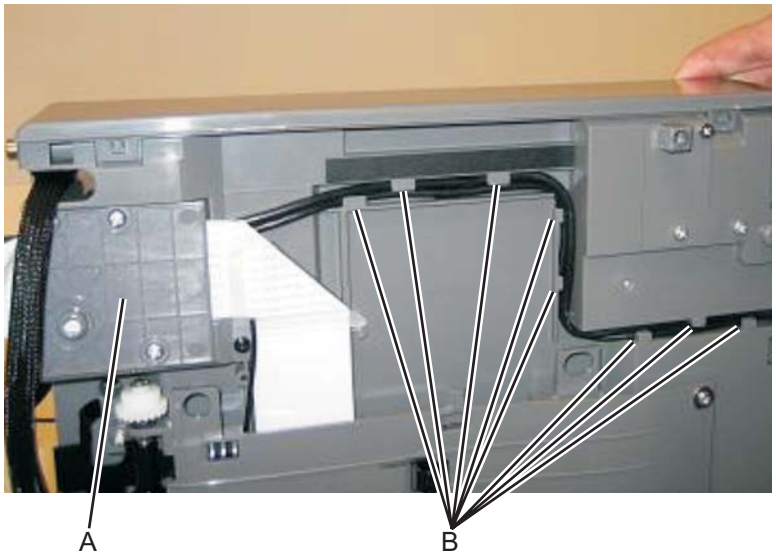
Op panel bezel removal

1. Place a flatbed screwdriver under the front of the bezel.

2. Pry the bezel up and away from the op panel. Be careful to avoid marring the bezel cover.

Op panel cable

1. Remove the operator panel bezel cover.
2. Remove the operator panel. See **"Operator panel removal" on page 4-76**.
3. Remove the flatbed assembly. See **"Flatbed removal" on page 4-53**.
4. Remove the CCD cable cover.

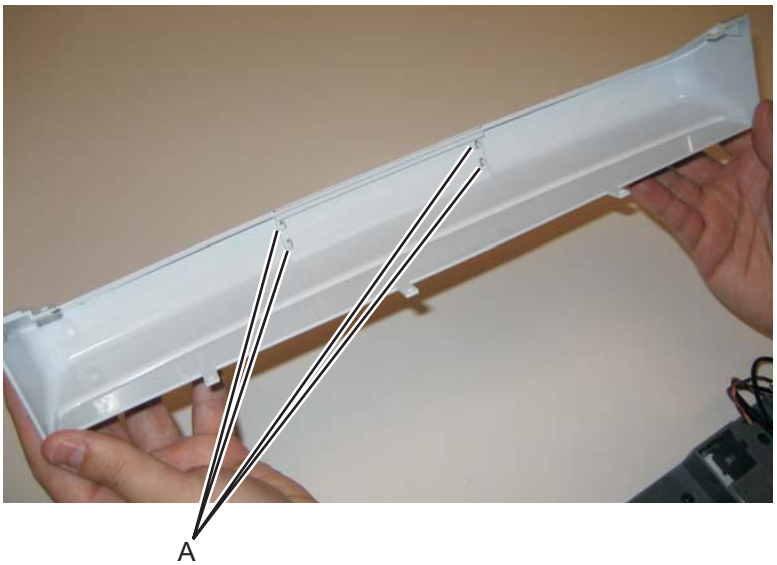


5. Unroute the operator panel cable through the tabs (B).

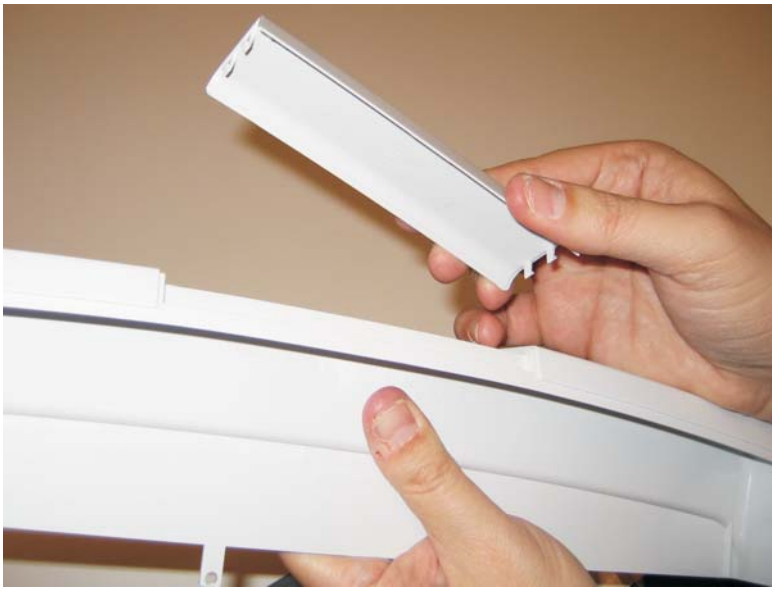
Warning: When replacing the op panel and USB cables, the cables must be routed in the exact same route with no overlapping of the cables. Failure to do so can result in the crimping of the cables. In addition, the redrive unit on the scanner might not make proper contact with the redrive rolls on the top cover. This could result in a paper jam under the flatbed unit.

Logo cover

1. Remove the op panel bezel cover. See **"Op panel bezel removal" on page 4-78**.
2. Use a flatbed screwdriver to depress the four tabs (A) securing the logo cover to the op panel bezel cover.

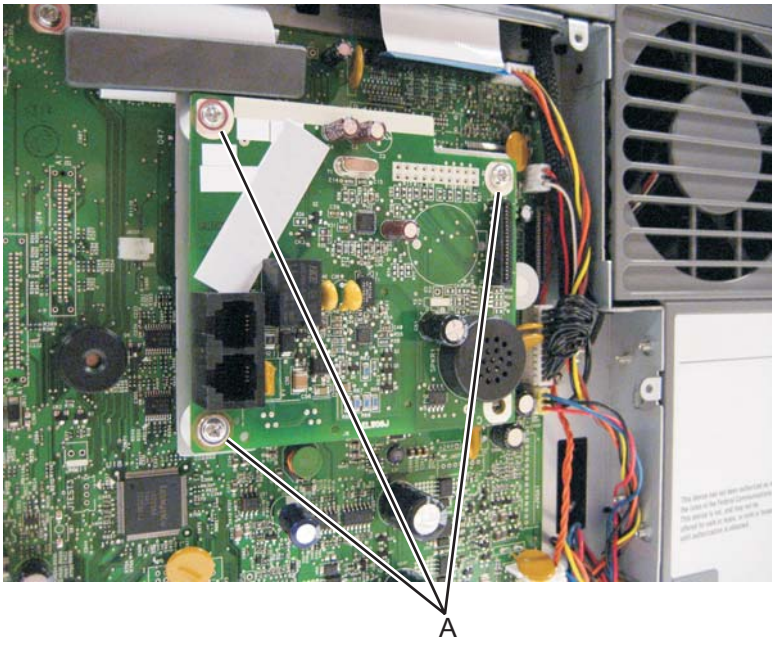


3. Pull the logo cover away from the op panel bezel cover.



Fax card removal

1. Remove the rear shield. See **"Rear shield removal" on page 4-7**.
2. Disconnect the fax interface cable from the fax card. See **"Fax interface cable" on page 4-80**.
3. Remove the three screws (A) which secure the fax card to the standoff on the controller board.



4. Remove the fax card.

Fax interface cable

1. Carefully detach the fax interface cable from the fax card.
2. Carefully detach the fax interface cable from the connector JMOD2 on the controller board.

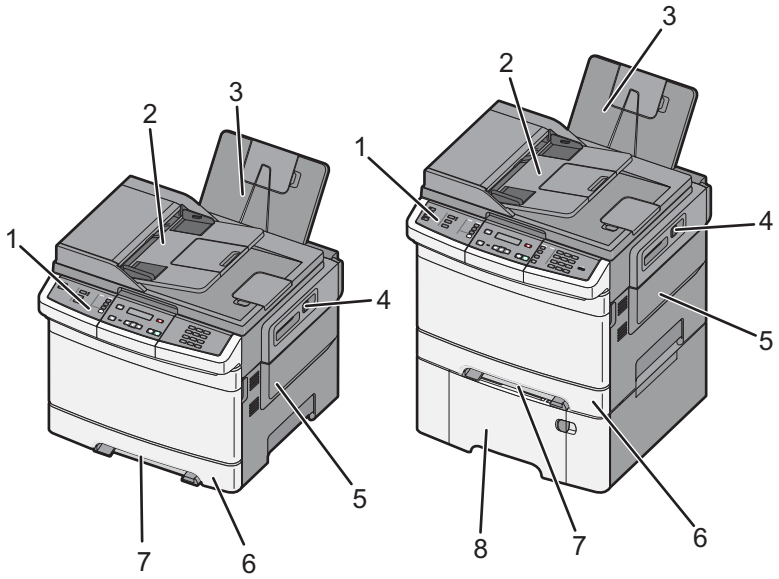
Output bin tray

1. Grasp and lift the rear output bin tray away from the MFP.

5. Locations

Exterior views

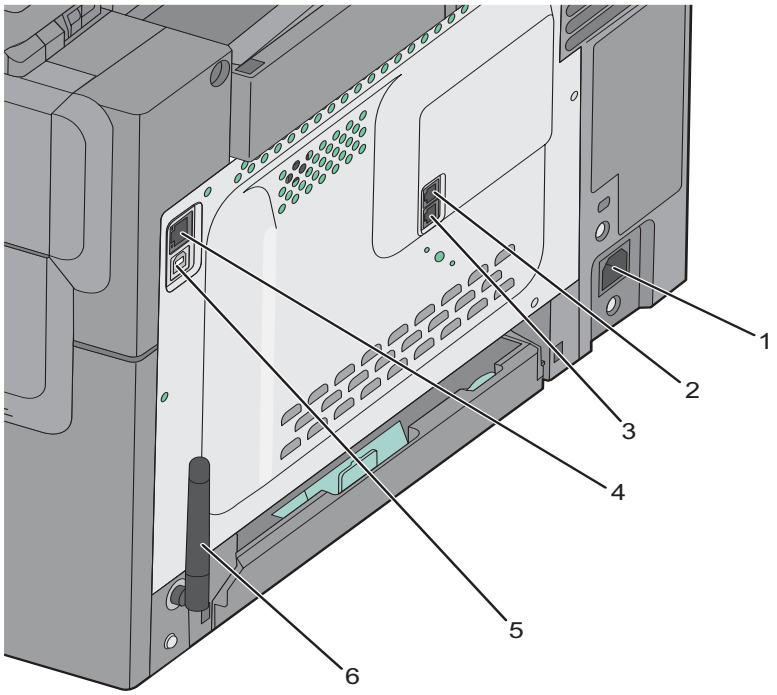
Front



Front view

Callout	Part name
1	Operator panel
2	ADF input tray
3	Output bin
4	AIO release
5	Right imaging unit cover (right cover)
6	Primary paper tray
7	Manual feeder
8	Multipurpose feeder

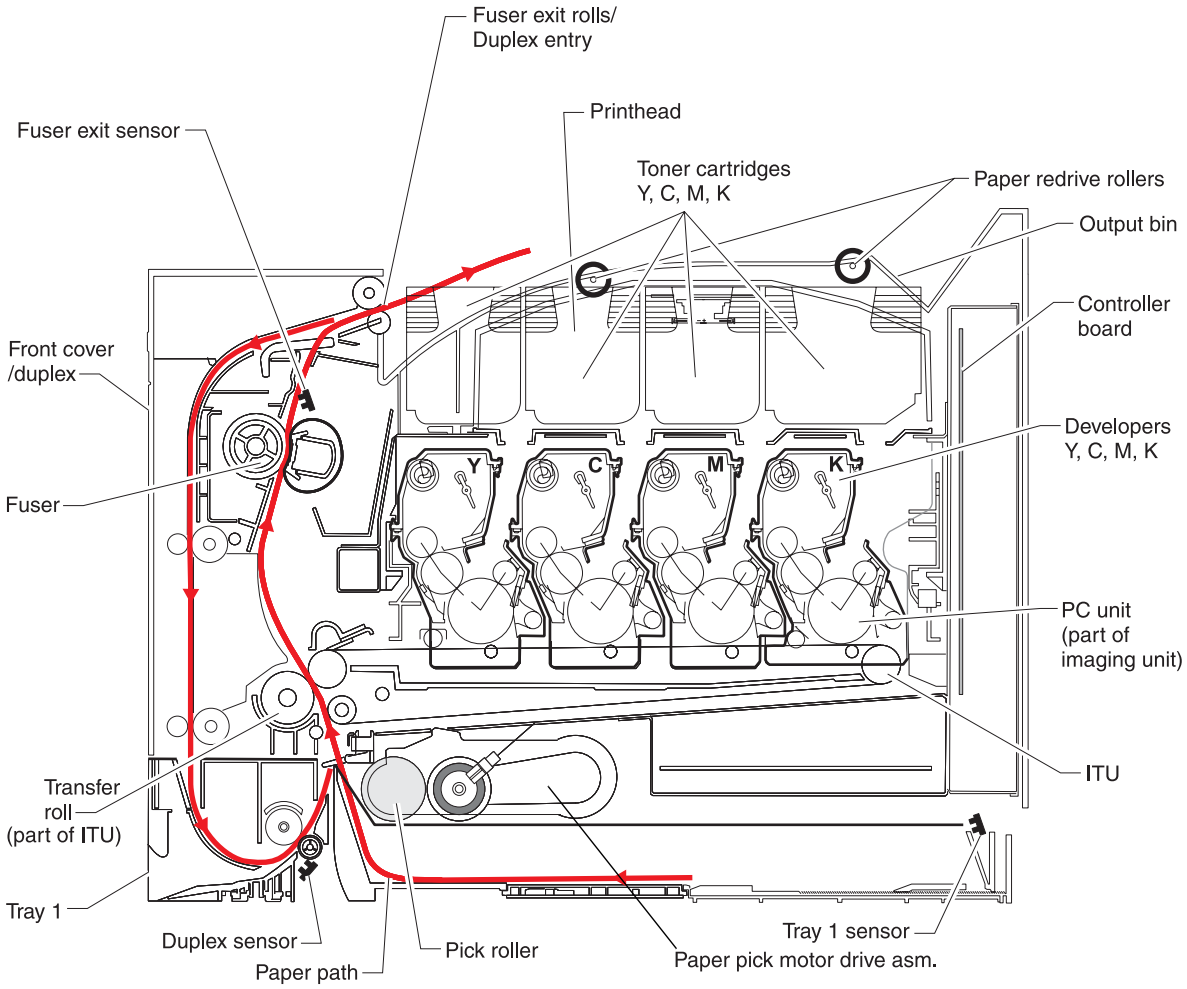
Rear



Rear view

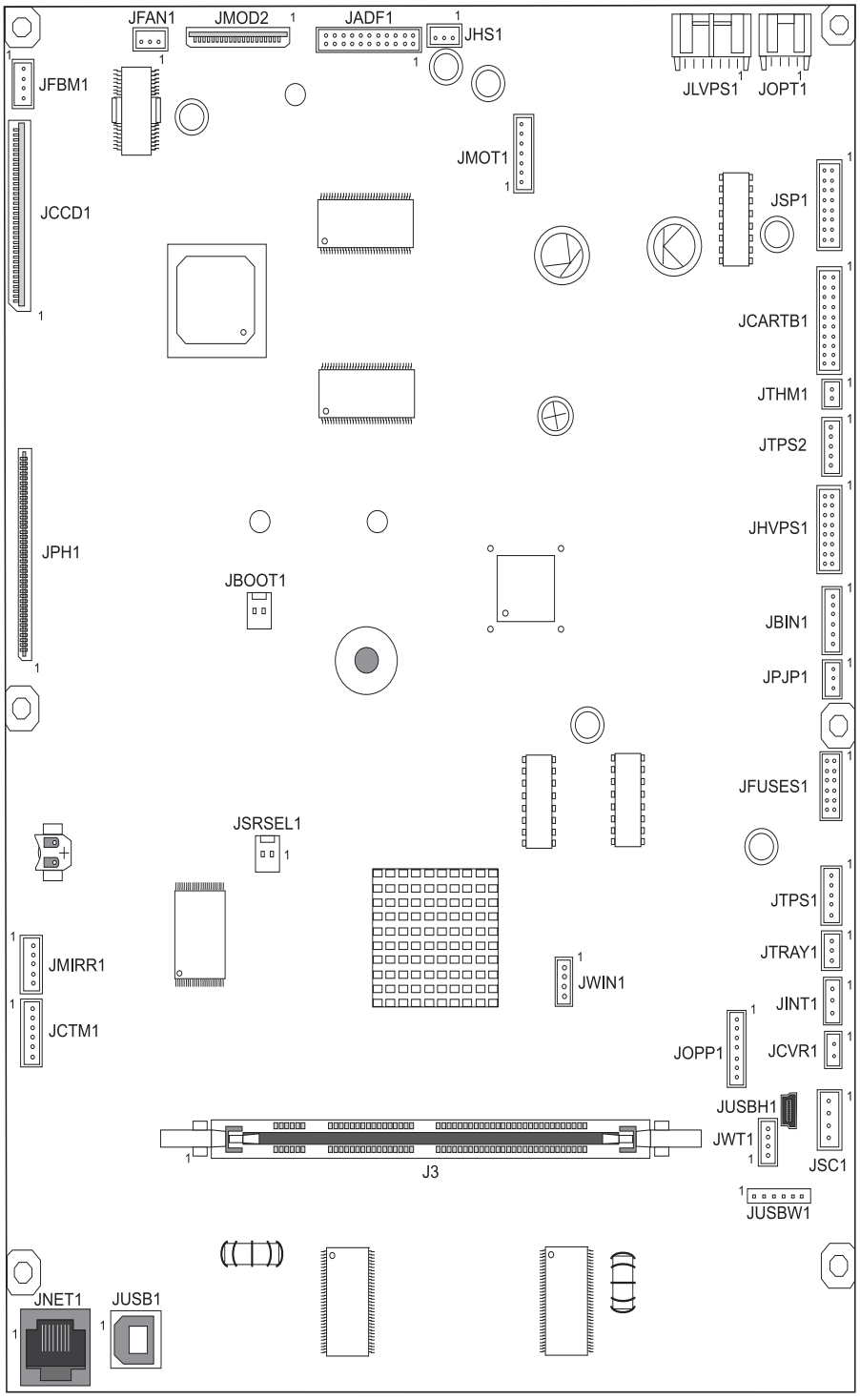
Callout	Part name
1	Power
2	Line
3	Line
4	Ethernet
5	USB
6	Wireless antenna

Interior view



Printer boards

Controller Board



Connectors

Controller board

Connector	Pin no.	Signal
JUSB1 Port	G1	Ground
	1	USB_5V_Sense
	2	USB D-
	3	USB D+
	4	Ground
	G2	Ground
JUSBW1	1	Ground
	2	USB_HST_VP
	3	USB_HST_VM
	4	Ground
	5	+3.3 V
	6	+3.3V
JFAN1	1	FAN_FG
	2	Ground
	3	V_FAN_P3
JMIRR1	1	MM_REFR
	2	MM_LOCK
	3	MM_START
	4	GND
	5	+24V_VC
JCTM1	1	+5V
	2	CART_METER_C_IN
	3	CART_METER_M_IN
	4	CART_METER_Y_IN
	5	CART_METER_K_IN
	6	GND

Controller board

Connector	Pin no.	Signal
JMOD2	1	NC_30V_CUHD
	2	NC_JMOD2_2
	3	POR_CHUD_R-
	4	+3.3V
	5	+3.3V
	6	NC_TONE_CUHD
	7	+5V
	8	IRQ_CUHD
	9	Ground
	10	SDA_CUHD
	11	Ground
	12	SCL_CUHD
	13	Ground
	14	CLK_CUHD
	15	Ground
	16	SDO_CUHD
	17	Ground
	18	SDI_CUHD
	19	Ground
	20	CS_CUHD

Controller board

Connector	Pin no.	Signal
JPH1	1	VDO_HSYNC1_C
	2	VDO_PH_OK
	3	VDO_HSYNC0
	4	VDO_LEN0
	5	VDO_BOOST3
	6	+3.3V
	7	VDO_BOOST1
	8	+5V_PH
	9	VDO_BOOST2 (Shade B)
	10	+5V_PH
	11	VDO_BOOST0
	12	Ground
	13	D_VDO_7+
	14	D_VDO_7-
	15	Ground
	16	D_VDO_3+
	17	D_VDO_3-
	18	Ground
	19	D_VDO_6+
	20	D_VDO_6-

Controller board

Connector	Pin no.	Signal
JPH1 (continued)	21	Ground
	22	D_VDO_2+
	23	D_VDO_2-
	24	Ground
	25	D_VDO_5+
	26	D_VDO_5-
	27	Ground
	28	D_VDO_1+
	29	D_VDO_1-
	30	Ground
	31	D_VDO_4+
	32	D_VDO_4-
	33	Ground
	34	D_VDO_0+
	35	D_VDO_0-
	36	Ground
	37	I2CCLK_PH
	38	VDO_LADJ1
	39	I2CDATA_PH
	40	VDO_LADJ

Controller board

Connector	Pin no.	Signal
JCCD1 - CCD ribbon cable	1	FBR_AFE_SDI
	2	FBR_AFE_SCK
	3	FBR_AFE_SEN
	4	GND
	5	FBR_AFE_D(0)
	6	FBR_AFE_D(1)
	7	GND
	8	FBR_AFE_D(2)
	9	FBR_AFE_D(3)
	10	GND
	11	FBR_AFE_D(4)
	12	FBR_AFE_D(5)
	13	GND
	14	FBR_AFE_D(6)
	15	FBR_AFE_D(7)
	16	GND
	17	FB_AFE_VSMP_R
	18	GND
	19	FB_AFE_RSMP_R
	20	GND
	21	FB_CCD_CLK_R
	22	GND
	23	FB_CCD_CLAMP_R
	24	GND
	25	FB_CCD_RESET_R
	26	GND
	27	FB_CCD_PHASE1_R
	28	FB_CCD_PHASE2_R
	29	GND
	30	FBR_CCD_TRANSFER
	31	+5V
	32	+5V
	33	+14V
	34	+14V
	35	FB_POWER_SAVER
	36	FB_LAMP_ON

Controller board

Connector	Pin no.	Signal
JHS - Home Sensor	1	+5V
	2	GNDS
	3	HOME_C
JFBM1 - Flatbed Motor	1	FBA-
	2	FBA
	3	FBB
	4	FBB-
JADF - ADF connector	1	I0A_ADF_C
	2	I1A_ADF_C
	3	GND
	4	DIRA_ADF_C
	5	GND
	6	I0B_ADF_C
	7	I1B_ADF_C
	8	GND
	9	DIRB_ADF_C
	10	GND
	11	+24V
	12	+24V
	13	GND
	14	+5V
	15	PAP_PRES2_2
	16	PAP_PRES3_C
	17	VREF2_ADF_C
	18	PAP_PRES_C
	19	ADF_CVR_C
	20	FIRST_SCAN_C
	21	FB_CVR_C
	22	SOL_EN_2
JSC1	1	V_CART_3V (+3.3V)
	2	DATA_SC
	3	CLK_SC
	4	Ground

Controller board

Connector	Pin no.	Signal
JOPP1	1	I2C_DATA
	2	V_PANEL+5V
	3	I2C_CLK
	4	Ground
	5	OP_IRQ_N
	6	+3.3
	7	Ground
JWT1	1	SENSE
	2	VREF
	3	VAC
	4	GND
JCVR1	1	V_24V_CVR
	2	COVER_OPEN
JINT1	1	+5V Fused
	2	Ground
	3	VS_INT
JTRAY1	1	ANODE (to+5V_SW)
	2	DUPLEX_ENT
	3	CATHODE (Ground)
JTPS2	1	ANODE
	2	CATHODE
	3	Ground
	4	(TPS2_ON)+5V_SW
	5	Ground
JFUSES1	1	V_FUSER_PHA+
	2	V_FUSER_PHA-
	3	V_FUSER_PHB+
	4	V_FUSER_PHB-
	5	FUSER_HR_THM (AVCC)
	6	FUSER_HR_THM_RTN
	7	+5V_SW
	8	Ground
	9	S1_MPF_SNS
	10	BELT_THM
	11	FUSER_HR_THM_RTN
	12	Ground

Controller board

Connector	Pin no.	Signal
JPJP1	1	+5V_SW
	2	PAPER_JAM_DET
	3	Ground
JBIN1	1	V_BF
	2	S_BIN_FB
	3	Ground
	4	V_BIN_4
	5	FUSER_EXIT_SNSR
	6	Ground
JHVPS1	1	M_DEV_PWM_OUT
	2	K_DEV_PWM_OUT
	3	C_DEV_PWM_OUT
	4	CMY_CHG_PWM_OUT
	5	Y_DEV_PWM_OUT
	6	K_CHG_PWM_OUT
	7	CMY_SRVO_OUT
	8	ITM_TX_PWM_OUT
	9	CMY_TX_PWM_OUT
	10	ITM_SRVO_OUT
	11	K_SRVO_OUT
	12	K_TX_PWM_OUT
	13	+24V
	14	Ground
	15	5V_HVPS_REF
	16	Ground
JTPS1	1	ANODE
	2	CATHODE
	3	Ground
	4	(TPS2_ON)+5V_SW
	5	Ground
JTHM1	1	TPS_THERM_SNS
	2	TPS_SNS_RTN

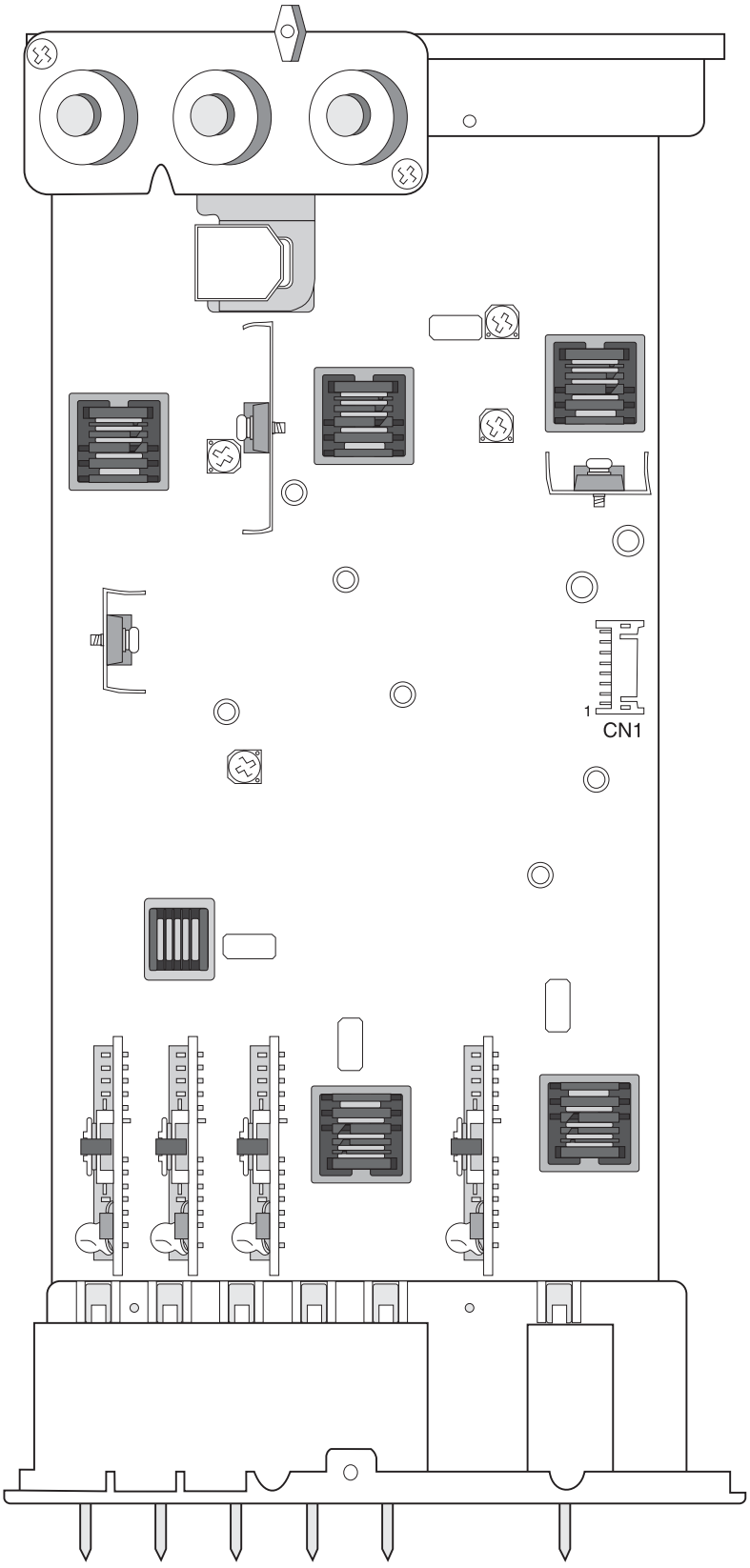
Controller board

Connector	Pin no.	Signal
JCARTB1	1	CART1_HALL_U
	2	NC_CARTB1_2
	3	CART1_HALL_V
	4	V_CART2_WIND_W
	5	CART1_HALL_W
	6	V_CART2_WIND_V
	7	CART1_PG
	8	V_CART2_WIND_U
	9	Ground
	10	+5V
	11	+5V
	12	Ground
	13	V_CART1_WIND_U
	14	CART2_PG
	15	V_CART1_WIND_V
	16	V_CART1_WIND_W
	17	V_CART1_WIND_W
	18	V_CART1_WIND_V
	19	NC_JCARTR1_19
	20	V_CART1_WIND_U
JSP1	1	ANODE
	2	M1_OUT1
	3	CATHODE
	4	M1_OUT2
	5	(+5V SW) VCC
	6	Ground
	7	Ground
	8	CATHODE
	9	VOUTA
	10	+5V
	11	VOUTB
	12	ANODE
	13	Ground
	14	ANODE
	15	+5V
	16	CATHODE

Controller board

Connector	Pin no.	Signal
JLVPS1	1	+5V
	2	Ground
	3	+5V
	4	Ground
	5	+5V
	6	Ground
	7	+24VC
	8	Ground
	9	+24VC
	10	Ground
	11	+24VC
	12	Ground
	13	RELAY_DRIVE
	14	ZERO_XING_IN
	15	HEAT1_ON
	16	GND
JOPT1	1	TXD_PP
	2	Ground
	3	Ground
	4	RXD_PP
	5	+24V
	6	Ground
	7	+5V_OPTIONS
	8	S2
	9	Ground
	10	Ground

HVPS

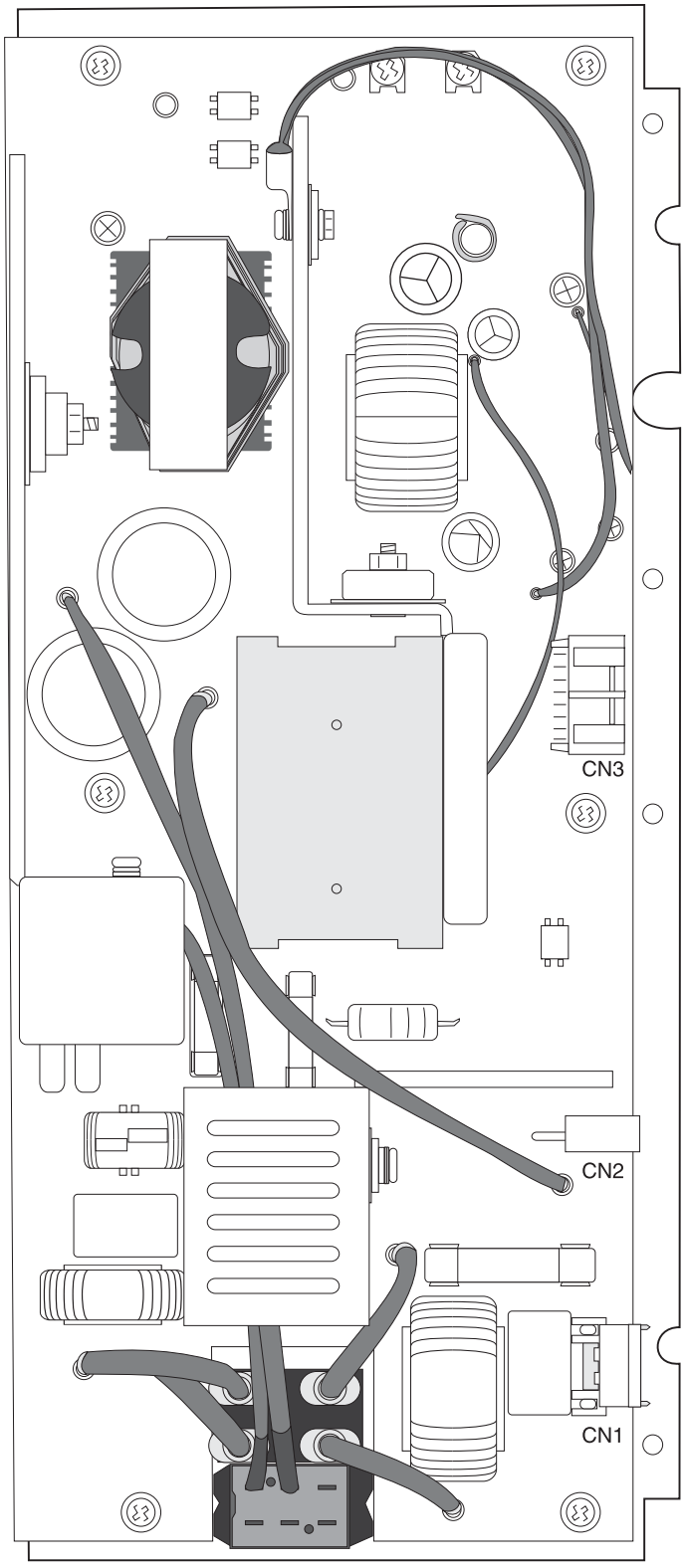


Connectors

HVPS board

Connector	Pin no.	Signal
Connection from controller board	1	M-Drpwm
	2	K-Drpwm
	3	C-Drpwm
	4	CMY-Chrgpwm
	5	Y-Drpwm
	6	K-Chrgpwm
	7	CMY-Srvo_Out
	8	I-Txpwm
	9	CMY-Txpwm
	10	I-Srvo_Out
	11	K-Srvo_Out
	12	K-Txpwm
	13	+24V
	14	+24VRtn
	15	VREF Buffered
	16	+24VRtn
Contacts to machine	1	I-Transfer
	2	CMY-Transfer
	3	K-Transfer
	4	K-Charge
	5	CMY-Charge
	6	K-DR Blade
	7	M-DR Blade
	8	C-DR Blade
	9	Y-DR Blade
	10	Ground

LVPS

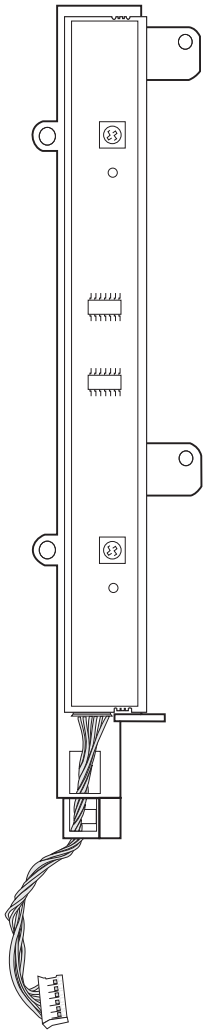


Connectors

LVPS board

Connector	Pin no.	Signal
CN1	1	+5V
	2	Ground
	3	+5V
	4	Ground
	5	+5V
	6	Ground
	7	+25V
	8	Ground
	9	+25V
	10	Ground
	11	+25V
	12	Ground
	13	Relay Drive
	14	ZC Out
	15	Heat On
	16	NC
CN2	1	AC phase input
	2	AC neutral input
CN3	1	AC Out
	29	AC load phase

Toner meter card

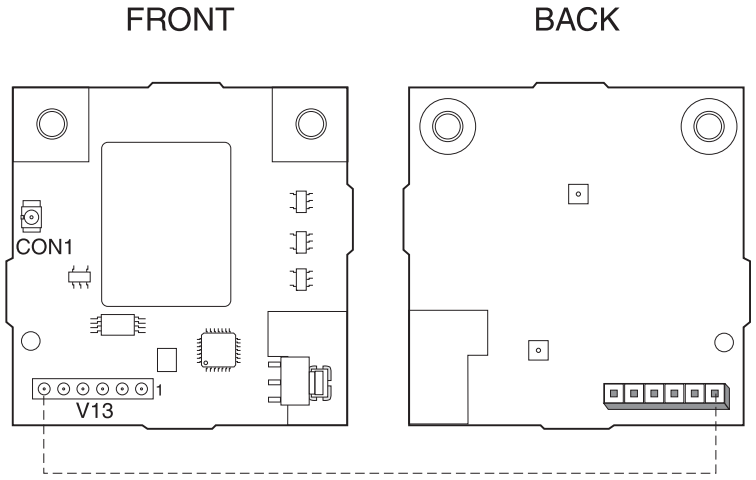


Toner meter card connectors

Toner meter card

Connector	Pin no.	Signal
From JCTM1 connector on the controller board	1	+5 V_SW
	2	Cart_Meter_C_IN
	3	Cart_Meter_M_IN
	4	Cart_Meter_Y_IN
	5	Cart_Meter_K_IN
	6	Ground

Wireless card



Connectors

Wireless card

Connector	Pin no.	Signal
From JUSBW1 on controller	1	Ground
	2	USB_HST_VP
	3	USB_HST_VM
	4	Ground
	5	+5V
	6	Wireless_POR

6. Preventive maintenance

This chapter describes procedures for printer preventive maintenance. Follow these recommendations to help prevent problems and maintain optimum performance.

Safety inspection guide

The purpose of this inspection guide is to aid you in identifying unsafe conditions.

If any unsafe conditions exist, find out how serious the hazard could be and if you can continue before you correct the hazard.

Check the following items:

- Damaged, missing, or altered parts, especially in the area of the On/Off switch and the power supply
- Damaged, missing, or altered covers, especially in the area of the top cover and the power supply cover
- Possible safety exposure from any non-Lexmark attachments

Lubrication specifications

Lubricate only when parts are replaced or as needed, not on a scheduled basis. Use of lubricants other than those specified can cause premature failure. Some unauthorized lubricants may chemically attack polycarbonate parts. Use IBM no. 10 oil, P/N 1280443 (Approved equivalents: Mobil DTE27, Shell Tellus 100, Fuchs Renolin MR30), IBM no. 23 grease (Approved equivalent Shell Darina 1), and grease, P/N 99A0394 to lubricate appropriate areas. Use Nyogel type 774 to lubricate the Fuser Drive Assembly and Nyogel 744 to lubricate the ITU and Cartridge Drive assemblies.

7. Parts catalog

How to use this parts catalog

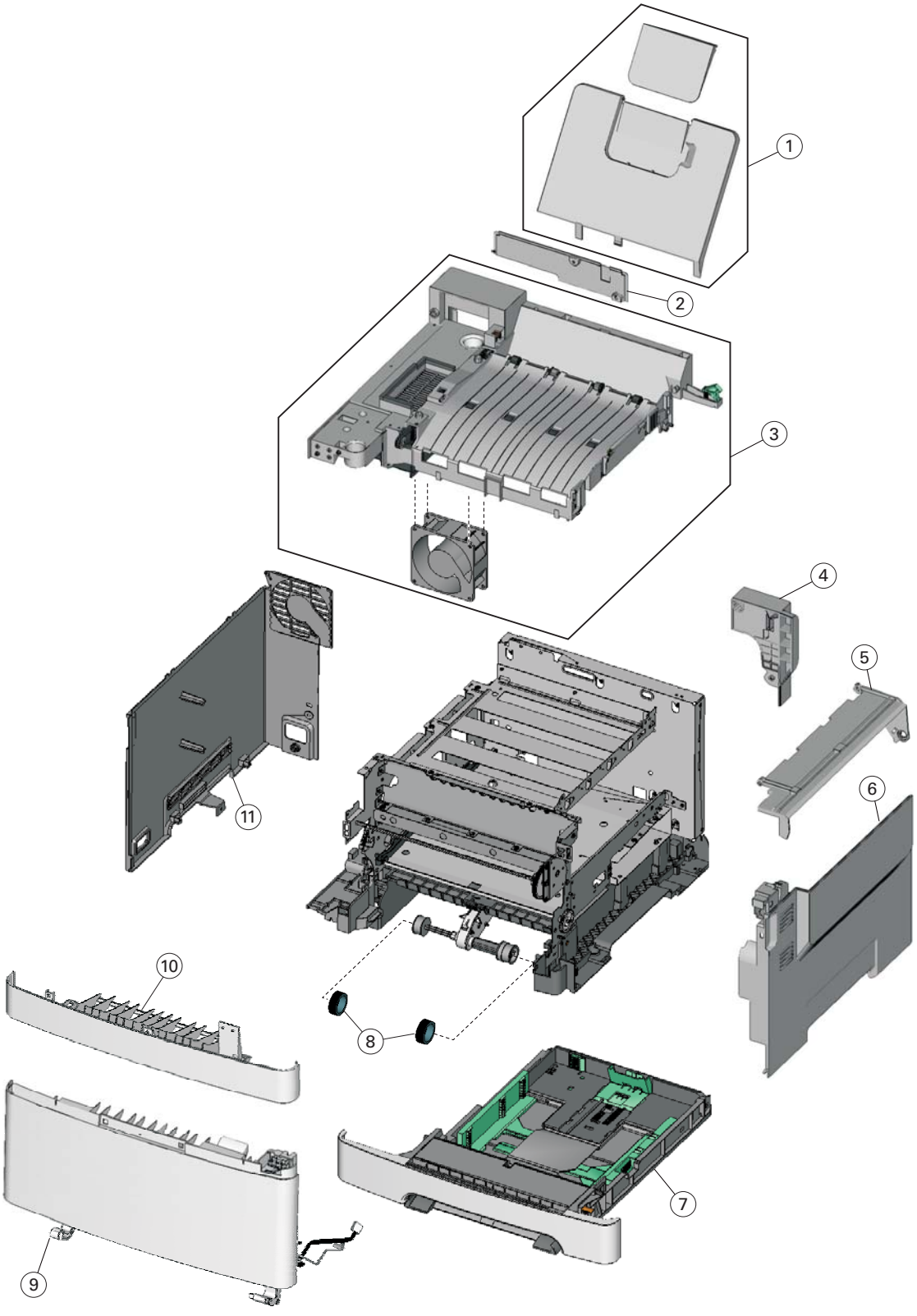
The following legend is used in the parts catalog:

Asm-index	Part number	Units/mach - OR - Units/option	Units/ FRU	Description

- **Asm-index**: Identifies the assembly and the item in the diagram. For example, 3-1 indicates Assembly 3 and item number 1 in the table.
- **Part number**: Identifies the unique number that identifies this FRU.
- **Units/mach**: Refers to the number of units actually used in the base machine or product.
- **Units/option**: Refers to the number of units in a particular option. It does not include the rest of the base machine.
- **Units/FRU**: Refers to the number of units packaged together and identified by the part number.
- **NS**: (Not shown) in the Asm-Index column indicates that the part is procurable but is not pictured in the illustration.
- **PP**: (Parts Packet) in the parts description column indicates the part is contained in a parts packet.
- Model information used in the parts catalog:

Machine type/model	Term used in parts	Product name	Description
7525-131	131	Lexmark X543dn	Network, duplex print
7525-133	133	Lexmark X543dn	Network, duplex print, DBCS op panel
7525-138	138	Lexmark X543dn	Network, duplex print, wireless
7525-356	356	Lexmark X544n	Duplex scan, fax
7525-352	352	Lexmark X544n	Duplex scan
7525-336[1]	336	Lexmark X544dn	Duplex scan/print, fax
7525-332[1]	332	Lexmark X544dn	Duplex scan/print,
7525-337[1]	337	Lexmark X544dn	Duplex scan/print, fax, DBCS op panel
7525-333[1]	333	Lexmark X544dn	Duplex scan/print,DBCS op panel
7525-386	386	Lexmark X544dw	Duplex scan/print, fax, wireless
7525-382	382	Lexmark X544dw	Duplex scan/print, wireless
7525-387	387	Lexmark X544dw	Duplex scan/print, fax, wireless, DBCS op panel
7525-383	383	Lexmark X544dw	Duplex scan/print, wireless, DBCS op panel
[1] A dtn version of this model is available. This version includes the 650-sheet tray.			

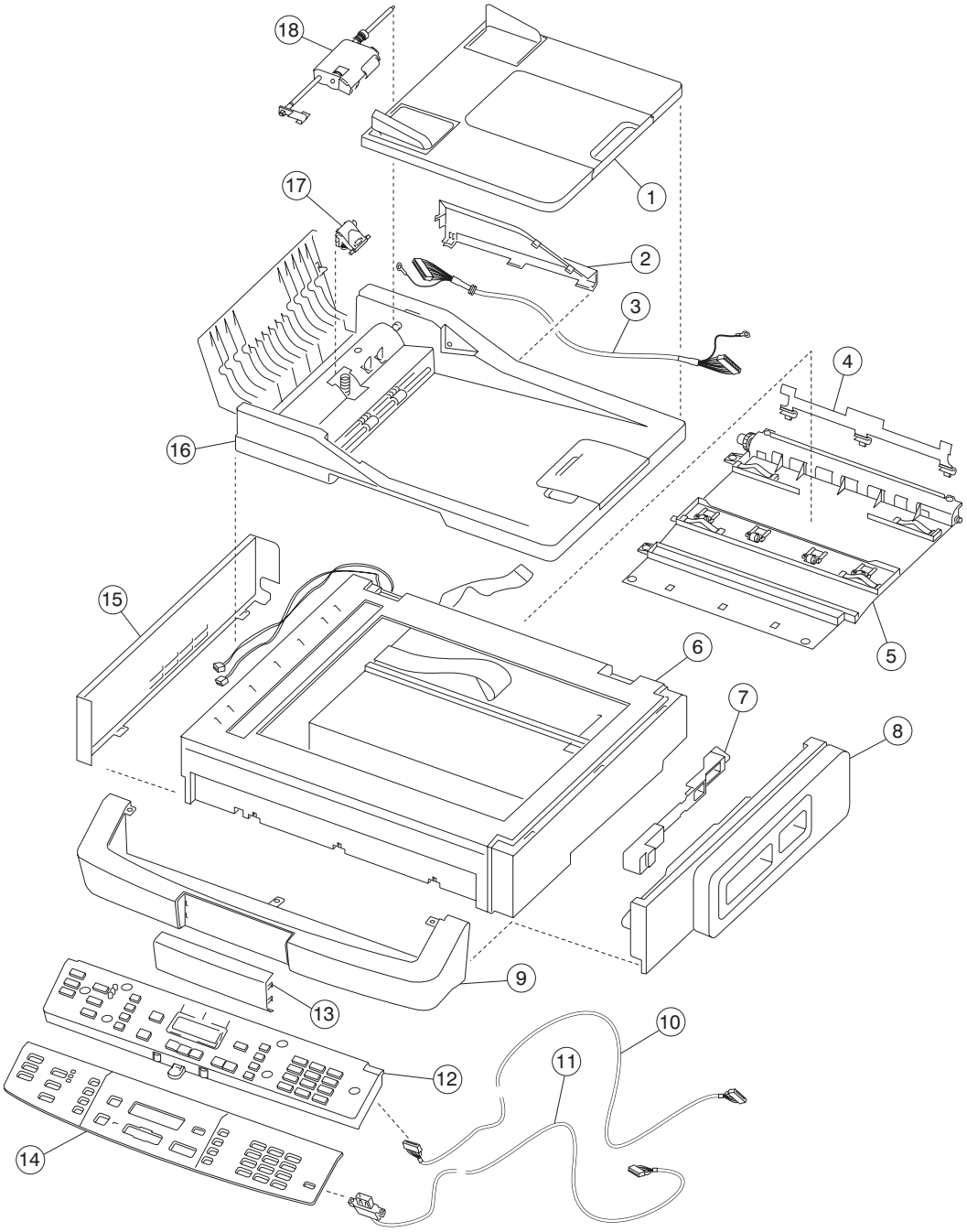
Assembly 1: Covers



Assembly 1: Covers

Asm-index	Part number	Units/ mach	Units/ FRU	Description
1-1	40X5484	1	1	Tray, Output Bin
2	40X5489	1	1	Cover, AIO Back Cable
3	40X5482	1	1	Assembly, Top Cover
4	40X5537	1	1	Link, AIO
5	40X5534	1	1	Cover, AIO Toner
6	40X5486	1	1	Cover, Right AIO
7	40X5419	1	1	Tray Asm, 250 sheet
8	40X5168	2	2	Pick tires
9	40X5538	1	1	Cover, Front
10	40X5490	1	1	Cover, Front Middle
11	40X5417	1	1	Cover, Left
NS	40X5434	1	1	Drawer, 650-sheet
NS	40X5435	1	1	Tray Asm, 650-sheet
NS	40X5441	1	1	Cover, Legal extender

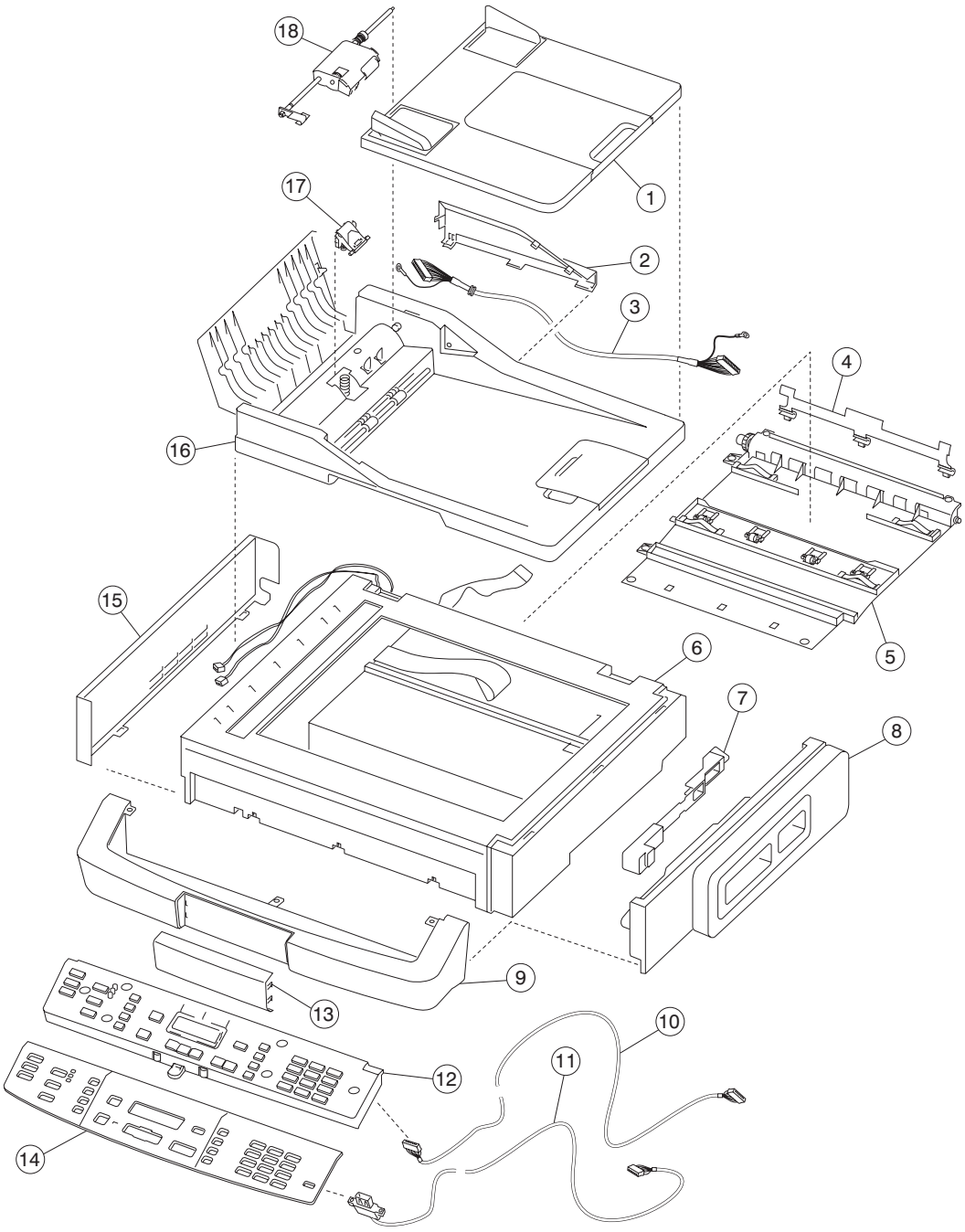
Assembly 2: Scanner



Assembly 2: Scanner

Asm-index	Part number	Units/ mach	Units/ FRU	Description
2-1	40X5470	1	1	Tray, ADF input
2	40X5477	1	1	Cover, ADF rear simplex
2	40X5478	1	1	Cover, ADF rear duplex
3	40X5479	1	1	Cable, ADF
4	40X5872	1	1	Bin full flag
6	40X5467	1	1	Asm, Flatbed
5	40X5492	1	1	Asm, redrive
7	40X5536	1	1	Lever, AIO release
8	40X5487			Cover, scanner right
9	40X5533			Cover, bezel
10	40X5481			Cable, Op panel
11	40X5480			Cable, USB (for thumbdrive)
12	40X5473			3-1 op panel
12	40X5474			4-1 op panel
12	40X5475			3-1 op panel DBCS
12	40X5476			4-1 op panel DBCS
13	40X5491			Cover, Logo
14	40X5493			Bezel, op panel 4-1 (English)
14	40X5494			Bezel, op panel 3-1 (English)
14	40X5495			Bezel, op panel 4-1 (French)
14	40X5496			Bezel, op panel 3-1 (French)
14	40X5497			Bezel, op panel 4-1 (Spanish)
14	40X5498			Bezel, op panel 3-1 (Spanish)
14	40X5499			Bezel, op panel 4-1 (German)
14	40X5500			Bezel, op panel 3-1 (German)
14	40X5519			Bezel, op panel 4-1 (Dutch)
14	40X5520			Bezel, op panel 3-1 (Dutch)
14	40X5511			Bezel, op panel 4-1 (Danish)
14	40X5512			Bezel, op panel 3-1 (Danish
14	40X5517			Bezel, op panel 4-1 (Swedish)
14	40X5518			Bezel, op panel 3-1(Swedish)
14	40X5515			Bezel, op panel 4-1 (Norwegian)
14	40X5516			Bezel, op panel 3-1 (Norwegian)
14	40X5513			Bezel, op panel 4-1 (Finnish)
14	40X5514			Bezel, op panel 3-1 (Finnish
14	40X5509			Bezel, op panel 4-1 (Italian)
14	40X5510			Bezel, op panel 3-1 (Italian)
14	40X5523			Bezel, op panel 4-1 (Russian)
14	40X5524			Bezel, op panel 3-1 (Russian)
14	40X5521			Bezel, op panel 4-1 (Polish)
14	40X5522			Bezel, op panel 3-1 (Polish)

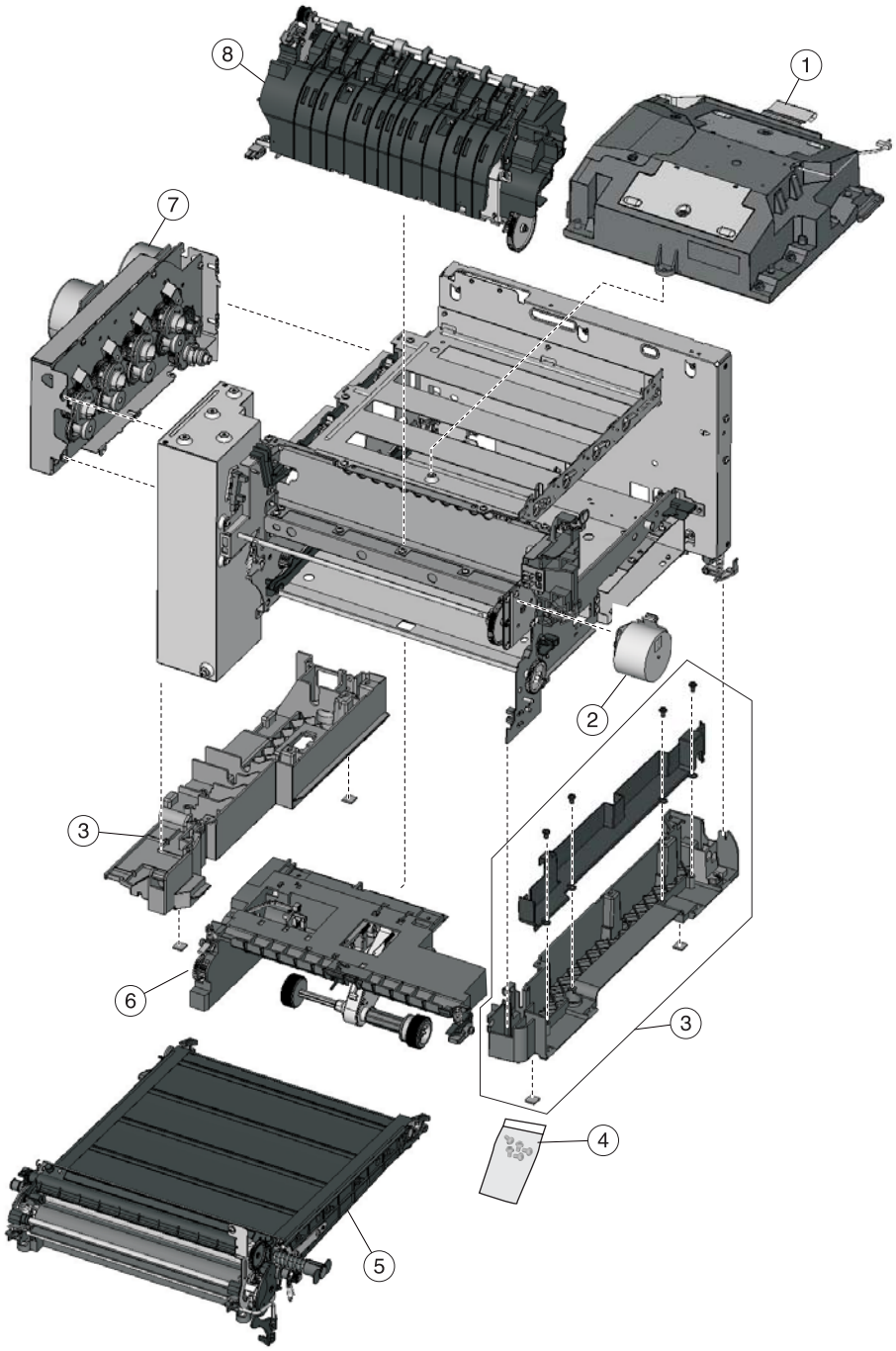
Assembly 2 (continued): Scanner



Assembly 2 (continued): Scanner

Asm-index	Part number	Units/ mach	Units/ FRU	Description
14	40X5525	1	1	Bezel, op panel 4-1 (Czech)
14	40X5526	1	1	Bezel, op panel 3-1 (Czech)
14	40X5529	1	1	Bezel, op panel 4-1 (Hungarian)
14	40X5530	1	1	Bezel, op panel 3-1 (Hungarian)
14	40X5505	1	1	Bezel, op panel 4-1 (Simplified Chinese)
14	40X5506	1	1	Bezel, op panel 3-1 (Simplified Chinese)
14	40X5507	1	1	Bezel, op panel 4-1 (Traditional Chinese)
14	40X5508	1	1	Bezel, op panel 3-1 (Traditional Chinese)
14	40X5531	1	1	Bezel, op panel 4-1 (Korean)
14	40X5532	1	1	Bezel, op panel 3-1 (Korean)
14	40X5501	1	1	Bezel, op panel 4-1 (Braz Por)
14	40X5502	1	1	Bezel, op panel 3-1 (Braz Por)
14	40X5503	1	1	Bezel, op panel 4-1 (Japanese)
14	40X5504	1	1	Bezel, op panel 3-1 (Japanese)
14	40X5527	1	1	Bezel, op panel 4-1 (Turkish)
14	40X5528	1	1	Bezel, op panel 3-1 (Turkish)
15	40X5488	1	1	Cover, scanner left
16	40X5468	1	1	Asm, Duplex ADF
16	40X5469	1	1	Asm, Simplex ADF
17	40X5472	1	1	Asm, Separator pad
18	40X5471	1	1	Asm. Separator roll
NS	40X5539	1	1	Cushion, L flatbed
NS	40X5535	1	1	Cushion, H flatbed

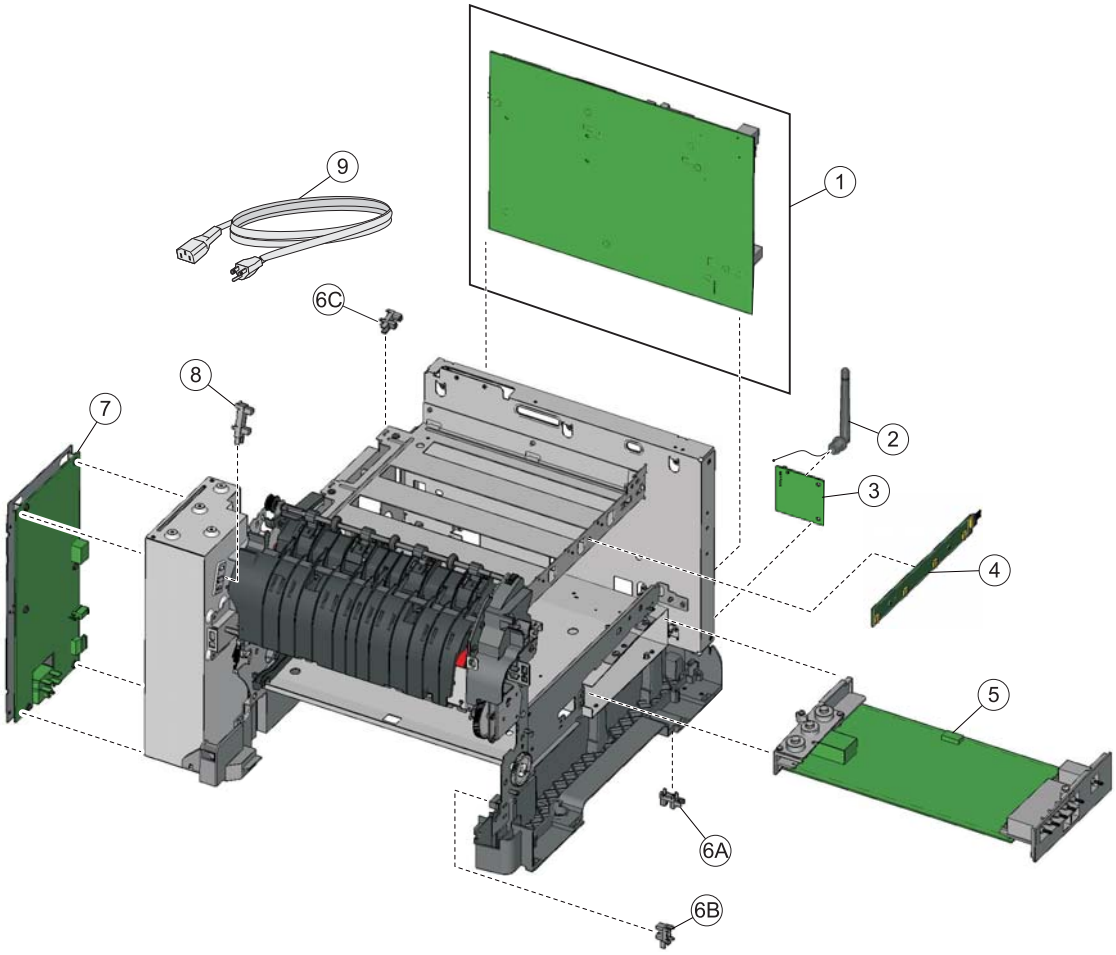
Assembly 3: Paperpath



Assembly 3: Paperpath

Asm-index	Part number	Units/ mach	Units/ FRU	Description
3-1	40X5411	1	1	Printhead
2	40X5415	1	1	Fuser drive motor assembly
3	40X5422	1	1	Bottom left and right frame and cable cover
4	40X5424	1	1	Screw packet, miscellaneous screws • TAPTITE M3 L6 PANHD(4) • Tray Bias (2) • Fuser Latch (2) • ITU Front Hold Down (1) • Front Cover Latch Spring (2) • M3 x 6 Pan Head (2) • M3 x 6 Shoulder (1) • M3.5 X 5 Flat Head Plastite (1) • METAL ROLN M3.5 8L (2) • PLAST ROLN 2.9 8L (2) • PLAST ROLN 3.5 6L (4)
5	40X5403	1	1	Image transfer unit (ITU) assembly
6	40X5410	1	1	(ACM) Paper pick motor drive assembly
7	40X5412	1	1	Main drive gear assembly, with motors
8	40X5406	1	1	Fuser assembly, 110 V
8	40X5407	1	1	Fuser assembly, 220 V
8	40X5408	1	1	Fuser assembly 100 V

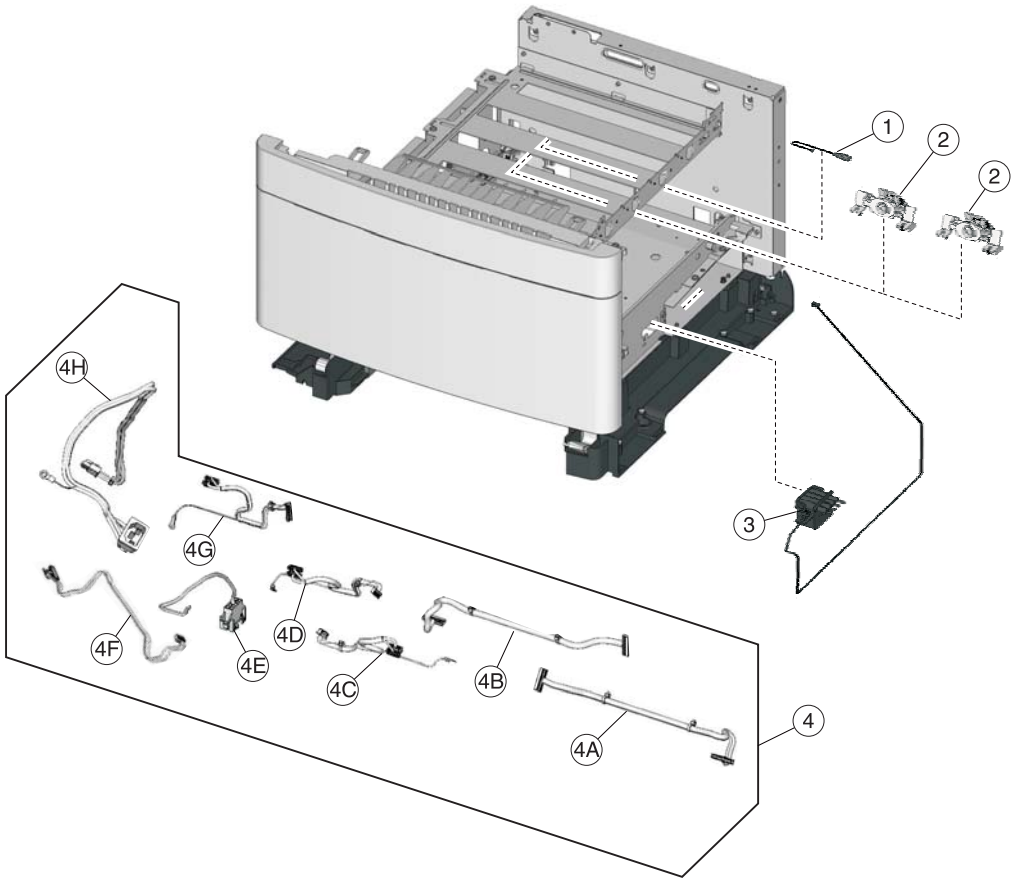
Assembly 4: Electronics 1



Assembly 4: Electronics 1

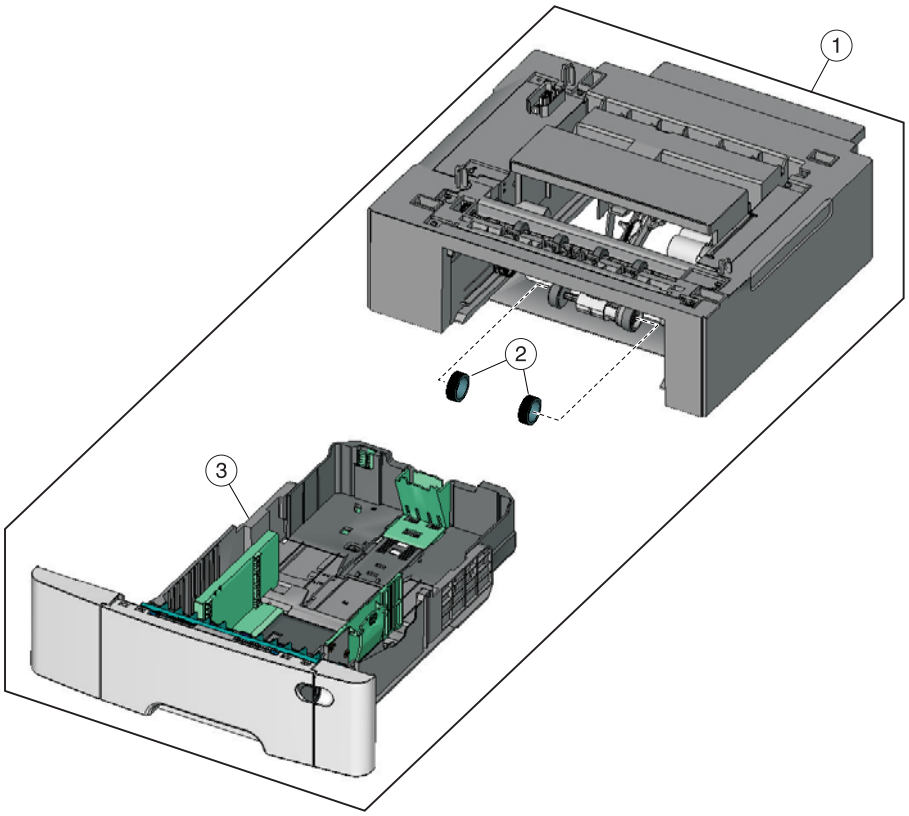
Asm-index	Part number	Units/ option	Units/ FRU	Description
4-1	40X5466	1	1	Controller board,,4-1
1	40X5465	1	1	Controller board, 3-1
2	40X5319	1	1	Wireless antenna
3	40X5036	1	1	Wireless card assembly
4	40X5404	1	1	Toner meter cycle card assembly
5	40X5405	1	1	High-voltage power supply
6	40X5426	3	1	Photo sensor (one per package) used for A Tray present B Interlock C Exit bin
7	40X5409	1	1	Low-voltage power supply (universal power supply)
8	40X5413	1	1	Fuser exit sensor
9	40X0289	1	1	Power cord, 1.8M (straight)—USA, Canada
9	40X0278	1	1	Power cord, 6 foot (straight)—Europe and others
9	40X0288	1	1	Power cord, 8 foot (straight)—Argentina
9	40X0271	1	1	Power cord, 8 foot (straight)—United Kingdom
9	40X0275	1	1	Power cord, 6 foot (straight)—Israel
9	40X0274	1	1	Power cord, 6 foot (straight)—Switzerland
9	40X0276	1	1	Power cord, 6 foot (straight)—South Africa
9	40X0287	1	1	Power cord, 6 foot (straight)—Traditional Italy
9	40X0279	1	1	Power cord, 6 foot (straight)—Denmark
9	40X0277	1	1	Power cord, 6 foot (straight)—Brazil
9	40X0282	1	1	Power cord, 1.8M (straight)—PRC
9	40X0270	1	1	Power cord, 2.5M (straight)—Japan
9	40X0280	1	1	Power cord, 1.8M (straight)—Korea
9	40X0281	1	1	Power cord, 1.8M (straight)—Taiwan
9	40X0296	1	1	Power cord, 1.8M (straight)—Australia
NS	40X5485	1	1	Fax interface cable
NS	40X4820	1	1	Fax PCBA

Assembly 5: Electronics 2



Asm-index	Part number	Units/ option	Units/ FRU	Description
5-1	40X5429	1	1	ITU paper path thermistor
2	40X5414	2	1	Toner density sensors, left or right (one in package)
3	40X5421	1	1	Imaging unit contact (Pogo pin)
4	40X5423	1	1	Cable packet, used for: A AC power in B Low-voltage power supply C High-voltage power supply D Fuser / S1 E CMY / K motors F Option tray G Fuser exit / narrow media / bin full H Wire tie - 1.0mm I Tray present cable

Assembly 6: Options



Asm-Index	Part number	Units/ opt.	Units/ FRU	Description
5—1	40X5434	1	1	Optional 650-sheet Duo Drawer unit (complete)
2	40X5168	2	2	Pick tires
3	40X5435	1	1	650-sheet Duo Drawer tray assembly
NS	40X5937	1	1	128MB DDR DRAM DIMM card assembly
NS	40X5938	1	1	256MB DDR DRAM DIMM card assembly
NS	40X5939	1	1	512MB DDR DRAM DIMM card assembly
NS	40X1455	1	1	64MB Flash card assembly
NS	40X5969	1	1	Korean font card assembly
NS	40X5970	1	1	Simplified Chinese font card assembly
NS	40X5971	1	1	Traditional Chinese font card assembly
NS	40X5972	1	1	Japanese font card assembly
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